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FINANCIAL MANAGEMENT PRACTICES AND
PLIGHT OF SMALL AND
MEDIUM-SIZED BUILDING "CONTRACTORS"

**FINANCIAL MANAGEMENT PRACTICES AND PLIGHT
OF SMALL- AND MEDIUM-SIZED BUILDING "CONTRACTORS"**

by

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ABSTRACT

This study examines the financial management practices (FMPs) and plight of small- and medium-sized building "contractors" (SMBCs) in the residential construction industry, and identifies the FMPs which have a material impact on the ongoing financial success and viability of SMBCs. The required primary data was collected by administering a mail questionnaire survey and an in-depth interview guide to two samples of SMBCs from the greater Montreal region.

This study finds that participants emphasize planning for execution rather than the financial viability of projects, appear to be oriented towards cost control rather than cash or profitability control, use few of the common risk management techniques frequently, incorrectly rate the initial (feasibility analysis) and final (marketing and selling) phases as being the least important in the eventual success or failure of projects, and operate at reduced managerial effectiveness due to overwork and overextension. The study finds that, while large homebuilders will gain market share over the next decade, SM homebuilders can continue to be a dominant force by exploiting numerous niches and their leanness, if their technical and human capital are continually updated.

Since a greater management orientation is required by residential construction industry participants, the study recommends the establishment of a formal education program dealing with construction entity and project management under the auspices of one of the industry Associations. Since accelerated computerization should lead to more innovation and competition, the study recommends that industry players accelerate the computerization (including prototype expert systems) of their technical and management functions (including financial management). Further studies of start-ups and

failures, the desirability of renovations as a niche for small participants, the low usage of risk management techniques, and the impediments to start-ups by females in this industry are also recommended.

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1. INTRODUCTION

Approximately 85 percent of Canadian businesses are small. They generate approximately 20 to 25 percent of Canada's GNP. As a major contributor to the Canadian economy, the complex and fragmented construction industry accounted for approximately 13.5 percent of Gross National Expenditure in 1985 [Statistics Canada (1987b)] and employed over 600 thousand Canadians in 1986. Not only is the relative bankruptcy rate in the construction industry high (for example, it varied between 15.4 and 20.3 percent of all bankruptcies between 1972 and 1984) but small- and medium-sized construction entities supposedly account for a large proportion of the number of bankruptcies [Dun and Bradstreet (1985)].

The maintenance, renewal and growth of the stock of housing in Canada is highly dependent upon the vibrancy and efficiency of small- and medium-sized building "contractors" (hereafter SMBCs); specifically, builders, developers, and general and trade contractors. If SMBCs are operationally inefficient and the provision of funds to SMBCs is hampered by numerous imperfections, then the provision of the appropriate housing stock will be more costly. Furthermore, since the exit of SMBCs is not costless, a high rate of such failures will further increase the cost of achieving the appropriate housing stock.

Although the same general principles of financial management apply to both large and small firms, the problems facing small firms are somewhat different from those facing large firms. The small firms in the residential construction industry face many unique industry- and entity-specific factors (such as seasonality, operations in a localized market, high capital requirements, varying degrees of technological expertise, and limited personal skills and resources) which may affect the use and implementation of

standard financial management techniques. Since smaller building "contractors" (BPs) are usually personally involved in most of the stages of a construction project (from project generation to project marketing) and interact with numerous external parties (such as financial institutions and subcontractors), project success depends on "contractor" proficiency in many managerial disciplines.

Before new financial management practices, new financing instruments and facilitating legislation are proposed to enhance the vibrancy and efficiency of SMBCs, knowledge about the existing financial practices and plight of this sector of the housing industry is required. Knowledge about how the various industry-specific factors affect the financial management practices and performance, and demise of SMBCs is also required.

1.1 Scope and Objectives of the Study

The primary purpose of this study is to identify the financial management practices (FMPs) critical to the ongoing success and viability of small- and medium-sized building "contractors" (SMBCs), which are completely or principally involved with residential construction. To generate data for the study, the financial management practices of two samples of SMBCs from the greater Montreal region will be studied to identify the determinants of financial success in this industrial sector.

The specific objectives of the study are:

- (1) to identify and describe how financial variables such as risk, return, and liquidity are measured and managed by SMBCs in general, and over the life of a project;

- (2) to identify and describe the nature of financial structures and strategies adopted by SMBCs to deal with global planning matters (including land acquisition, project selection, and corporate entity);
- (3) to identify and describe the specific sources of financing (cost, conditions, and availability) used by SMBCs, and examine the strengths and weaknesses of the SMBC-lender relationship;
- (4) to determine whether SMBCs are adequately capitalized and earn a rate of return sufficient to compensate for expected risks;
- (5) to describe and evaluate the methods used by SMBCs to control project cost and cash flow;
- (6) to determine if there exists a threshold level of operations (as proxied by construction volume) beyond which the financial viability of SMBCs is jeopardized; and
- (7) to identify aspects of SMBC financial management practice which, if improved, would increase the likelihood of financial success on the part of a SMBC.

As in Adrian (1976), the construction entities studied herein have been classified by their annual volume of work. Specifically, general contractors with work volumes less than \$4 million are classified as small, those with work volumes of \$4 million and up to \$12 million are classified as being medium, and those with work volumes above \$12 million are classified as being large. Similarly, builders and developers with work volumes less than \$10 million are classified as small, those with work volumes of \$10 million and up to \$20 million are classified as being medium, and those with work volumes above \$20 million are classified as being large. These classifications are congruent with the self-classifications of their relative size by the

interviewed representatives of the twenty-two entities which were directly involved in the construction industry as developers and/or builders and/or general contractors (for greater details, see section 3.2.2.1).

1.2 Organization of the Remainder of the Study

The remainder of this study is organized as follows. In the next section, the available literature on the financial management of BCs is reviewed. In the third section, the methodology is described. In the fourth section, the results of a mail questionnaire survey of a sample of BCs, which are located in the greater Montreal area, are presented and analyzed. In the fifth section, the results of in-depth personal interviews with a sample of SMBCs and facilitators, which are located in the greater Montreal area, are presented and analyzed. In the sixth and final section, some concluding remarks, recommendations and directions for further research are offered.

2. SURVEY OF THE LITERATURE*

2.1 The Building Construction Industry

2.1.1 Definitions

According to Statistics Canada, construction is the "creation, renovation, repair and demolition of immobile structures including the alteration of the natural topography of the ground". Although this definition includes various diverse activities and sectors, the construction industry is defined herein to include the sectors discussed in Table 2.1. According to Statistics Canada (1987b), residential construction includes:

- (1) Single detached houses, summer cottages, and other dwelling units, which are completely separated on all sides from any other structure;

* I am grateful to John La Schiazza for his assistance in writing this section of the report.

Table 2.1

Sectors Included in the Construction Industry

<u>Sector</u>	<u>Description</u>
Residential General Contractors	Specialize in the construction of individual houses or multiple units (usually as prime contractors).
Nonresidential General Contractors	Specialize in the construction of commercial, institutional and light industrial buildings, and act as prime contractors by providing overall coordination for execution, and financial accountability and responsibility.
Trade Contractors	Execute work primarily related to a single construction trade (such as mechanical, electrical, plumbing, drywalling and bricklaying) under contract to a general contractor, developer or owner.
Repair, Renovation or Retrofit Contractors	Specialize in repairing, improving or modifying existing buildings and structures.
Construction or Project Management Entities	Act as the owner's agent by coordinating the planning, design, and construction phases of the project, and provide management, engineering, procurement and other construction services (including financial accountability and responsibility).
Developers and Builders	Assemble land and funds for the construction of residential and nonresidential buildings, usually on a speculative basis until renters or buyers are secured. They undertake both the design and construction phases of the project, and may sell all or part of the completed units or retain all or part ownership interest in the completed units.

- (2) Double units, which are dwelling units separated by a common wall extending from ground to roof, or two dwelling units in which one is above the other and connected to no other structure;
- (3) Row housing, which is single attached dwellings in rows of three or more units;
- (4) Apartment buildings, which include dwellings of the apartment, flat-type, and which incorporates double-duplex, triplex, row-duplexes, apartments and condominiums.

In the United States, construction entities have been classified by their annual volume of work [Adrian (1976)]. Thus, construction entities with work volumes less than \$1 million are classified as small, those with work volumes of \$1 to \$20 million are classified as being medium, and those with work volumes above \$20 million are classified as being large.

2.1.2 Market Structure

As an assembly industry, the building construction industry produces a wide variety of heterogeneous products (i.e., buildings or erections) [see, for example, Clough and Sears (1979) and Stone (1983)]. Due to specific function, size, design and unique location, no two products are perfect substitutes for each other. Hence, the building construction market is fragmented and segmented. Each submarket is characterized by monopolistic competition [Maurice and Smithson (1985)].

The Canadian real estate development industry consists of a few big players and many small players who compete on national and regional (or local) levels, respectively. Large developers tend to concentrate on the commercial sector, while small developers tend to concentrate on the housing sector. The reason is the high interest rates experienced during the 1980s. The large developers moved to less interest sensitive (but more capital

intensive) investments (i.e., the commercial and industrial sectors), while the smaller developers remained in the more high-risk, interest-sensitive housing market.

2.1.3 Supply and Demand Characteristics

From inception to completion, a building construction project requires the mobilization of various independent entities over a protracted period of time. After completion, the basic features of a building (such as size, shape and quality) cannot be altered to satisfy changes in demand without the expenditure of considerable resources. Thus, due to the long gestation period required to bring a new building to market and its heterogeneous nature, suppliers of buildings cannot respond rapidly to changes in market demand.

While holding an inventory of buildings would facilitate the industry's flexibility to adjust to market changes, this alternative is not feasible due to the high cost of carrying such inventory [Stone (1983)]. For example, for commercial and industrial construction projects, construction generally proceeds only after sufficient leases or sales contracts have been entered into so that financing can be arranged [Clough and Sears (1979)]. Similarly, for speculative residential construction projects, developers usually wait for latent demand to become important before undertaking such projects.

At any point in time, the flow of new buildings is small compared to the existing stock, and the proportion of buildings offered for sale is higher in the secondary than the primary market [Stone (1983)]. Thus, in the short-to-medium term, supply can be taken as being fixed and inelastic. Given the nature of supply, changes in demand generate large price changes.

Since most purchases of buildings are levered, demand for construction products is sensitive to the availability and cost of financing. Since

changes in the effective price of construction output (i.e., capital cost plus the cost of loan servicing) result in disproportionate changes in the quantity demanded, demand in the construction industry tends to be elastic [Stone (1983)].

2.1.4 Adjustments to Changes in Demand

Under conditions of monopolistic competition, economic theory suggests that no single construction firm can cause a shortage by reducing supply, and, thus, increase prices and revenues. Each firm will take the market price as a given, and will produce units as long as the marginal costs do not exceed the expected selling price [Maurice and Smithson (1985)].

A change in demand will initially increase market prices and profits for existing firms. New entrants enter and all firms are willing to pay more for factors of production. Due to informational imperfections and the inflexible nature of the construction process, producers overproduce and stocks of unsold units begin to accumulate. In order to resolve the financial burden of carrying unsold units, producers reduce prices (sometimes even below average total costs). Building capacity in the industry is reduced as marginal firms downsize or close.

According to Stone (1983), the adjustment time in the construction industry is asymmetrical in that it is longer when demand falls than when it rises. Due to different entry and exit costs, producers find entry easy when demand rises and exit difficult when demand falls. Entry costs are low because of low minimum fixed capital requirements and easy licensing procedures. Exit costs are high because many participants do not effectively scan their external environments to accurately forecast market developments, and reliable information is difficult to obtain given the private nature of transactions and thinness of most real estate markets.

2.1.5 Comparison of the Risks Borne by General Contractors and Developers

As in other industries, firms in the building construction industry are exposed to both business and financial risk. Some determinants of business risk are summarized in Table 2.2.

In general, developers bear greater risk than general contractors. The primary responsibilities of a general contractor is to complete the construction project on time and within budget. If actual final costs grossly exceed expectations, the financial consequences will depend on the type of contract which was signed with the developer. While the general contractor has no direct ownership in the project, s/he usually receives regular payments from the developer based on actual site progress. While the general contractor's total cash inflow is often predetermined and secured by the signed contract, the timing of intermediate cash inflows is unknown.

Since a completed project may not generate the required cash inflows to cover all cash outflows, a developer's future operating income is less predictable than that of a general contractor. Thus, developers bear more business risk during the construction period than a general contractor.

As the owner of the project, the developer usually borrows the bulk of the required capital costs. In contrast, the general contractor only requires a small percentage of the funds required by the developer. The general contractor requires funds for bond deposits,¹ and occasionally for the interim payments made to suppliers and labourers prior to receiving the progress payments from the developer. Thus, developers generally bear a higher financial risk than general contractors.

2.1.6 Profile of Smaller-sized Building Construction Entities

Entry into the construction industry is easy since relatively small amounts of capital are required [Jackson and Gilliam (1981)] and licenses are

Table 2.2

Three Determinants of Business Risk in the Building Construction Industry

<u>Determinant</u>	<u>Description</u>
Demand Variability	For a developer, product demand can change between project initiation and completion. For the general contractor, payment in full at project completion is assured by the legal contract.
Price Variability of Required Inputs	This depends upon the type of contract signed. It may be borne solely by the developer or the general contractor, or be shared by the two parties.
Ability to Adjust Output Prices for Changes in Input Prices	Since market prices are determined more by market demand than by construction costs, the developer may not be able to pass along the higher production costs by increasing output prices. A lump-sum contract restricts the ability of a general contractor to adjust output prices for higher input prices, while a negotiated contract permits the general contractor to affect a partial-to-complete adjustment of output prices.

easy to obtain [Adrian (1976) and Stone (1983)]. As a result, these small (generally undercapitalized) entrants lack the financial strength to cope with the problems caused by fluctuating market demand, inflation and a tight money supply. While they rely on the financial institutions for funding, many lenders perceive such firms as being high-risk clients [Adrian (1976), Jackson and Gilliam (1981) and Bonny (1973)]. Ease of entry results in an influx of construction entrepreneurs that lack the requisite experience, training and management skills to succeed [Burgess (1982), Newton (1975) and Stone (1983)].

Although smaller building contractors and developers generally have operational expertise, they often lack sophisticated financial management, planning and control skills. The majority allegedly rely primarily on intuition and experience to develop business strategies and to manage their financial operations [Burgess (1982) and Statistics Canada (1987b)].

Due to a lack of resources, the informal mode of operations, the difficulty in designing, installing and enforcing controls, a preference for operational involvement, and a strong aversion to administrative activity, smaller building contractors and developers often do not implement financial plans and controls. As a result, many smaller building contractors and developers begin with little knowledge about when a project will be completed, at what cost, and at what resulting profit [Burgess (1982)]. Without appropriate financial objectives, plans and controls, many of these entities move from crisis to crisis with the resultant undesirable financial performance.

Unlike medium-sized building construction firms who operate at the regional level, small-sized firms generally operate only at the local level. Due to market-size and resource-level constraints, the smaller-sized firms

are more vulnerable to market downturns because they have limited ability to alter their output mix.

2.1.7 Profile of Building Construction Entrepreneurs

Building construction entrepreneurs are supposedly hard-working, independent and the last of the "true" entrepreneurs [Bank America (1978)]. Based on their strong confidence in their projects and themselves, they exercise considerable control over all phases of their business affairs. They execute many of the managerial tasks themselves and sometimes perform some of the physical construction work. Although they gain a very broad experience, few entrepreneurs gain specialized knowledge in many of the specific aspects of building construction [Berger and Godel (1976)].

According to Statistics Canada (1987b), six characteristics of smaller building contractors and developers include: First, they make extensive use of external professional services (such as accounting, legal, engineering, architectural and marketing). Second, they operate with few direct employees and a minimum of overhead expenses. Third, they share accounting and other administrative duties with a spouse or other family member. Fourth, they have an optimistic and dogmatic management style. Fifth, their orientation is towards "pushing the work" on site and solving job-site problems and crises. Sixth, they do not undertake formal or adequate evaluation of the environment prior to developing their strategies.

2.2 Financial Management

If they are to be successful, SMBCs require the same types of financial decision-making systems and controls as large construction entities. All building contractors and developers require formal financial management systems which can deal with project generation, appraisal and selection,

planning and control of construction projects, and risk assessment and management.

2.2.1 Project Generation, Appraisal and Selection

Two important determinants of the type of construction projects generated by a building contractor or developer are market information and corporate objectives. Each proposed construction project should be carefully assessed in terms of marketability, technical feasibility and financial viability. The quality of a project appraisal depends on the rigor of the evaluation procedure, and on the availability, reliability and validity of the input data. Much of the input data should come from an inhouse data bank which contains relevant and timely information on costs and productivity.

Projected after-tax cash flows and the cost of capital should be the principal elemental data in a project appraisal. Evaluators of financial desirability include the payback period, accounting rate of return, net present value, profitability index, and the internal rate of return.

2.2.2 Construction Financial Planning

Techniques for estimating, scheduling and forecasting cash flows allegedly minimize uneconomical and inefficient field operations in order to achieve higher quality output, better on-site productivity, earlier delivery and lower overall costs [Burgess (1982)]. The estimation of construction project costs involves: the assimilation and study of project details through engineering drawings and work method plans; the collection of relevant data from sources internal and external to the organization; and the estimation of the required amounts of materials, manpower, machinery, capital and time required to complete the project. The estimates quantify the

appropriate value and duration of a project by evaluating its various elements in terms of cost and time to build.

For a developer, cost estimates are used to determine the project's capital investment costs, economic feasibility, financial requirements, and final design. They also assist in the control of costs during the construction program [Tenah and Guevara (1985)]. For general contractors, project cost estimates are primarily used to formulate a competitive or negotiated bid price, to assist in the control of field costs, and to determine the working capital requirements for a project [Tenah and Guevara (1985)]. Types of cost estimates include: order of magnitude estimates, basic unit estimates, elemental cost estimates [Ahuja (1984)] and detailed cost estimates.

Numerous scheduling techniques, which vary in complexity and sophistication, are available. They include work breakdown structure, gantt or bar charts, line balance, critical path method, procedure diagramming, and resource levelling and allocation. Since they are not direct financial planning techniques, they are not discussed further herein [for greater details, see Pilcher (1985), Roman (1986) and Tenah and Guevara (1985)].

2.2.3 Financial Control of Construction Projects

While financial planning provides targets which direct the firm, financial controls aid the firm or construction project to satisfy its predetermined objectives. Financial controls periodically monitor current performance, compare it to planned performance, and take corrective action to rectify any deviations or variances [Ahuja (1984), Tenah and Guevara (1985)]. This requires the correct interpretation of timely and accurate information on work schedule and resource expenditure variances.

Effective management control in the construction industry is difficult because of the unique characteristics encountered on a construction site. The temporary nature of the construction team, the uniqueness of any specific building project, varying weather conditions, labour recruited on an ad hoc basis (which affects quality and productivity of the workmanship), and the geographic separation of the work sites and head office, are a few of the factors that make control more difficult [Pilcher (1985)].

For both a developer and a general contractor, lack of control usually results in cost and schedule overruns. In the case of the general contractor, overshooting the targets can also lead to litigation and penalties from the owner [Roman (1986)].

2.2.4 Risk Assessment and Management

There are three major types of risks associated with construction projects: technical risks associated with the design or construction stage, commercial risks associated with the execution and market delivery stages, and financial risks associated with financing the project. Common techniques for assessing these risks include sensitivity analysis, scenario analysis, and Monte Carlo simulation. The builder, developer or general contractor must decide on what risks s/he will bear and what risks can be transferred to third parties, such as insurance companies, suppliers and subtrades.

3. METHODOLOGY

3.1 Secondary Sources

An extensive survey of the available literature on the financial management practices of building contractors was conducted to determine what was already known about the financial management practices of building contractors. A brief review of that literature was presented in section 2.

As expected, the knowledge and insights thereby gained proved to be especially valuable in the preparation of both the mail questionnaire and the in-depth personal interview guide.

3.2 Primary Sources

A mail questionnaire survey and in-depth personal interviews were used to collect the primary data analyzed in this study.

3.2.1 Mail Survey

A mail survey was used to gather information on the financial management practices and experiences of building contractors because it allowed the investigator to economically gather information on a large number of building contractors. Furthermore, it was the belief of the investigator that these entities would be less reluctant to divulge the required financial information if they were approached using an instrument which allowed them to remain anonymous.

3.2.1.1 The Population

The population consisted of over 13,000 building construction entities which were supposedly active during the fall of 1987 and were located in the greater Montreal area. The population included all of the entities in the database maintained by "La Regie des Entreprises de Construction du Quebec" (RECQ) for the five categories described in Table 3.1. An official of the RECQ confirmed that builders and developers were included in each of these categories.

3.2.1.2 The Sample

To minimize bias and to maximize generalizability, a random sample of 330 entities was drawn from the above population of building "contractors"

Table 3.1

The RECQ Categories Comprising the Population
of Building "Contractors"

Category Title/Description

4041	Residential construction and renovation contractors--Class I. This category includes contractors doing construction work on residential buildings of four or less floors above ground.
4042	Residential construction and renovation contractors--Class II. This category includes contractors doing construction work on all types and sizes of buildings (except those described in category 4041), which are destined primarily for residential use.
4043	Repair, retrofit, and renovation residential contractors. This category includes contractors who specialize in complete or partial renovation, reparation, and retrofitting of residential buildings, including the addition of relatively small building space(s) to the original structure.
4050	Commercial, industrial and institutional construction and renovation contractors--Class I. This category includes contractors involved with buildings with four or less floors built primarily for public, government, and commercial use. This category also includes contractors who construct buildings for light industrial use.
4051	Commercial, industrial and institutional construction and renovation contractors--Class II. This category includes contractors, who construct buildings of all types and sizes (except those described in category 4050), which are destined primarily for public, governmental and commercial uses (includes additions to existing structures).

(BCs).² Selected entities were also cross-referenced against the "construction works" listing of the Construction Association of Montreal and the Province of Quebec (CAMQ) to maximize the probability that they were active and to ensure that BCs operating in new construction were adequately represented in the sample. The CAMQ list of member entities is subdivided by new and renovation construction for each type of structure.

Unfortunately, neither list of contractors classified its members by organizational size. Hence, a sample of only small and medium-sized entities could not be drawn. Thus, the survey instrument was designed to enable a proper classification of the BCs by size for the purpose of data analysis.

3.2.1.3 The Mail Questionnaire

A mail questionnaire was designed to elicit the information required to meet most of the specific objectives of this study, which were discussed in section 1. To facilitate response, the questionnaire was produced in three languages; namely, English, French, and Italian. The questionnaire consisted of sixty-seven items which were grouped into twelve sections. To compensate for the length of the mail questionnaire,³ most of the questions asked provided a set of possible responses which were believed to be both comprehensive and mutually exclusive. To elicit the required information, 58 of the questions used nominal scales and nine of the questions used a five-point "Likert-type" interval scale.

3.2.1.4 Administration of the Mail Survey

After the pre-test, some adjustments were made to the style, wording and sequence of the questions on the mail questionnaire. During late October 1987, a French-language version of the questionnaire, accompanied by a covering letter and a self-addressed stamped envelope, was mailed to each of

the entities being surveyed. From November 1987 through March 1988, one set of reminder letters/two sets of telephone calls were sent/made to all non-respondents to increase the response rate. Also, during this period of time, many questionnaires had to be remailed to nonrespondents for a variety of reasons. These included: the first questionnaire had not been received or had been misplaced; the surveyed entity had changed its location and thus mailing address; and the respondent wanted to complete the questionnaire in the language of his or her choice.

3.2.2 In-Depth Personal Interviews

Since the analysis of the mail survey responses indicated that a number of issues required further investigation, the principal investigator then conducted a number of in-depth personal interviews.

3.2.2.1 The Sample

This new sample consisted of twenty-five entities; namely, twenty-two entities which were directly involved in the construction industry as developers and/or builders and/or general contractors (for greater details, see Table 3.2), and three entities which were involved in the construction industry as facilitators (i.e., lenders or receivers). Only three of the nonfacilitator entities were large, and only three of the nonfacilitator entities (all general contractors) had no direct experience (involvement) with residential construction. The ages of the nonfacilitator entities varied from 3 to 33 years, and at least five of the major owners/partners of the nonfacilitator entities had a university degree in engineering.

3.2.2.2 The In-depth Personal Interview Guide

An in-depth personal interview guide was designed to elicit the remaining information required to meet the specific objectives of this study

Table 3.2

**Two Characteristics of the Sample of the
Twenty-five Interviewed Entities**

Category	Size ^a	Number
Developer	Large	2
Developer	Medium	2
Developer	Small	2
Developer and Promoter	Small	1
Builder	Medium	2
Builder	Small	1
Builder and Project Manager	Small	2
General Contractor	Large	1
General Contractor	Medium	1
General Contractor	Small	4
General Contractor and Builder	Small	2
General Contractor and Project Manager	Medium	1
General Contractor, Builder & Project Manager	Small	1
Lender	Large	2
Receiver	Large	1

^a For the criterion used to classify the entities, see section 1.1.

(see section 1). The interview guide consisted of seven sets of mostly open-ended questions dealing with land acquisition, individual project planning and control, financing, determinants of success and failure, business performance and evaluation, and background information.

3.2.2.3 The In-Depth Personal Interviews

The arrangement of each interview took considerable time. Many interviewees had to be telephoned more than five times before they either agreed to be interviewed or a mutually agreeable time for an interview could be found. The in-depth personal interviews were conducted during the period from November 1, 1988 through February 17, 1989. Thirteen of the interviews were conducted by the principal researcher, and twelve were conducted by the principal researcher together with his research assistant. The duration of the interviews ranged from 60 to 150 minutes, and averaged 80 minutes. A typical interview lasted for 75 minutes. All of the interviews were pleasant and constructive, and most of the interviewees were frank and forthcoming.

4. MAIL SURVEY RESULTS

4.1 Response Rate

By April 1, 1988, 71 of the 330 surveyed BCs had returned partially or fully usable questionnaires. No questionnaires were received after the April 1 cut-off date. The response rate of 21.5 percent is a typical mail questionnaire response. Given the consistency between the responses for the two mutually exclusive samples, the mail questionnaire responses are believed to be valid and generalizable to the sample of nonrespondents and to the population of BCs.

4.2 Business Performance and Evaluation

The respondents (N of 68) used the following criteria to measure their operational effectiveness: 80.9 percent used profits achieved, 52.9 percent used customer satisfaction, 19.1 percent used rate of return on total assets, 13.2 percent used growth of sales revenue, 4.4 percent used market share, and 4.4 percent used other criteria such as "debt/equity". None of the respondents used market share by itself to measure operational efficiency, and one-half of the respondents used more than one criterion to measure their operational effectiveness. For example, 42.2 percent of the respondents used at least profits achieved and customer satisfaction to measure their operational effectiveness.

Based on the mean responses given in Table 4.1, on-site constructing (4.279), followed by estimating (4.071) and financing (4.000), are the functions that the respondents felt that their businesses carried out best. In contrast, the respondents felt that their businesses were only average in carrying out their marketing and selling functions (3.164). Only seven percent of the respondents felt that their businesses carried out all seven functions extremely well.

Based on the chi-square values, the respondents' ratings of how well their businesses carry out the estimating function is positively associated with whether or not a cost estimate is prepared before beginning to work on a project, and is not associated with the perceived difficulty of controlling job site progress or material cost or material usage or material availability or labour costs or labour availability or tool and equipment costs for a typical project.

Based on the chi-square values, the respondents' ratings of how well their businesses carry out the budgeting function is not associated with

Table 4.1

Rating of How Well Their Businesses Carry Out Seven Major Functions

<u>Function</u>	<u>Carry Out*</u>					<u>N**</u>	<u>Mean</u>
Estimating	0	1	15	32	22	70	4.071
Budgeting	1	5	19	27	16	68	3.765
Scheduling	0	6	23	25	17	71	3.746
Financing	1	5	12	23	25	66 ^a	4.000
On-site constructing	0	0	6	37	25	68	4.279
Controlling of costs & progress	0	5	20	21	24	70	3.914
Marketing & selling	5	13	23	18	8	67	3.164

* Left and right limits of "one" and "five" are "extremely poor" and "extremely well", respectively.

** "N" refers to the total number of responses.

^a The two respondents, who gave more than one rating for this major function, have been deleted from the sample.

whether or not a control or cash budget is prepared before beginning to work on a project, or with the perceived difficulty of controlling overhead costs for a typical project.

Based on the chi-square values, the respondents' ratings of how well their businesses carry out the scheduling function (former variable) is not associated with whether or not a work schedule is prepared before beginning to work on a project, or with the perceived difficulty of controlling job site progress or material cost or material availability or labour costs or labour availability or tool and equipment costs or subcontractor delays for a typical project. The former variable is negatively associated with the perceived difficulty of controlling material use for a typical project.

Based on the chi-square values, the respondents' ratings of how well their businesses carry out the financing function is not associated with whether or not they prepare pro forma balance sheets and income statements before beginning to work on a project.

Based on the chi-square values, the respondents' rankings of how well their businesses carry out the on-site constructing function (former variable) is not associated with whether or not a work schedule is prepared before working on a project, or with the number of hours of on-site labour personally furnished by the respondents. However, the former variable is negatively associated with the difficulty of controlling job site progress, labour costs and subcontractor delays for a typical project.

Based on the chi-square values, the respondents' rankings of how well their businesses carry out controlling of costs and progress (former variable) is not associated with whether or not they develop and maintain a job cost information system for their projects, or with whether or not they prepare a work schedule or control budget before beginning work on a project,

or with the difficulty of controlling job-site progress or material cost/availability/use or labour costs/availability or tool and equipment costs or subcontractor delays or subcontractor requests for additional funds or overhead costs for a typical project, or with the number of hours of on-site labour personally furnished by the respondents, or with whether or not the criteria for measuring the operational efficiency of a completed project is whether the project is completed within the planned time schedule. The former variable is positively associated with whether or not the criteria for measuring the operational efficiency of a completed project is whether total project costs are within the budgeted cost estimates.

Based on the chi-square values, the respondents' rankings of how well their businesses carry out the marketing and selling function is not associated with the importance they attach to final product marketability in assessing the total risk of a specific project.

Of the applicable respondents (N of 59), 55.9 percent stated that their businesses had an optimal level of operations. Their optimal number of construction units/contracts in progress at any one point in time (N of 20) ranged from 2 to 50, with a mean of 8.4. Their optimal dollar volume of construction units/contracts in progress at any one point in time (N of 23) ranged from 0.1 to 70 million dollars, with a mean of 8.6 million dollars. Despite the ambiguity in their responses, there appears to be little consensus on whether or not, and what is the optimal level of operations for BCs. Thus, this issue requires more in-depth study.

According to the 33 respondents whose businesses had an optimal level of operations, the items which were significantly affected when this optimal level of operations was exceeded, in decreasing order of importance, were: increase in required personal commitments (23 respondents), dilution of

control (22 respondents), decrease in profitability (19 respondents), diminution of the control of costs and progress (15 respondents), more equity required (8 respondents), funding harder to obtain (6 respondents), and new investment in fixed assets and/or working capital required (6 respondents). Thus, the major effect of exceeding the optimal level of operations for a BC is a decrease in risk-adjusted performance caused by a loss of control and an increase in personal risk.

4.3 Individual Project Feasibility Analysis and Risk Assessment

To evaluate the feasibility of a potential project, 38.9 percent of the applicable respondents (N of 18) conducted neither a market/marketability analysis nor a financial feasibility analysis, 22.2 percent conducted a market/marketability analysis, 22.2 percent conducted a financial feasibility analysis with cost/price escalation, 5.6 percent conducted a financial feasibility analysis with no cost/price escalation, 5.6 percent conducted both a market/marketability analysis and a financial feasibility analysis with cost/price escalation, and 5.6 percent conducted a financial feasibility analysis with and without cost/price escalation.⁴

Of the respondents who formally evaluate the feasibility of a potential project (N of 11), 45.5 percent use net income divided by total investment (ROI) to measure the financial desirability of new projects, 27.3 percent use payback, 9.1 percent use net present value (NPV), 9.1 percent use payback and NPV, and 9.1 percent use ROI, IRR and NPV. Not only do a majority of the respondents not evaluate the financial feasibility of a potential project but most do not use financial evaluators based on discounted cash flows.

Only five of the respondents specified a cost of capital rate, k . The measure of k differed by respondent and included: cost of debt (such as the mortgage rate), cost of equity capital, weighted average cost of capital, and

return on a risk-free asset plus a premium associated with the applicable risk class. Thus, it appears that, while some respondents incorrectly use the component cost of capital to evaluate the feasibility of a potential project, others do not adjust for the risk inherent in the potential project being evaluated.

With regard to risk assessment, 32.4 percent of the applicable respondents (N of 68) quantify risk, 41.2 percent assess risk subjectively, 16.2 percent do not assess risk explicitly, 5.9 percent do not assess risk, and 4.4 percent both quantify risk and assess risk subjectively. Based on the chi-square values, whether or not risk is assessed is not associated with the importance of any of the specific macro or micro factors considered in assessing the total risk of a specific project.

Based on the mean responses given in Table 4.2, the weather (3.576), followed by general economic activity (3.365) and interest rates (3.127), are the most important of the macro factors in assessing the total risk of a specific project. In contrast, the political party in power (1.984), followed by public order (2.367) and government incentives (2.371), are the least important of the macro factors in assessing the total risk of a specific project.

Based on the mean responses given in Table 4.2, the availability and cost of labour (4.254), followed by the availability and cost of materials (4.123) and labour productivity (4.076), are the most important of the entity-specific factors in assessing the total risk of a specific project. Other important factors advanced by the respondents included: "manpower", "working conditions", "location of project", "owner's track record", "errors of submission", and "schedule requirements". In contrast, final product marketability (3.017), followed by accidents on the job site (3.164) and

Table 4.2

Rating of the Importance of Various Factors in Assessing the Total Risk of a Specific Project

<u>Factor</u>	<u>Importance*</u>					<u>N</u>	<u>Mean</u>
Macro:							
General economic activity	7	10	11	23	12	63	3.365
Interest rates	12	10	10	20	11	63	3.127
Rate of inflation	13	14	13	17	6	63 ^a	2.825
Government regulations	16	15	21	7	3	62	2.452
Government incentives	20	15	16	6	5	62	2.371
Public order	19	13	18	7	3	60	2.367
Environmental regulations/ 							

* Left and right limits of "one" and "five" are "not important" and "extremely important", respectively.

^a Excludes one respondent who gave a multiple response.

^b Excludes two respondents who gave multiple responses.

delays in obtaining permits (3.219), are the least important of the entity-specific factors in assessing the total risk of a specific project.

The respondents' perceptions of what the financial risk is of being involved in a construction project varied. 25.8 percent of the respondents (N of 66) perceived it to be the possibility of loss of investment, 24.2 percent perceived it to be the probability of a negative return on investment, 48.5 percent perceived it to be the probability of not achieving a given target return, 18.2 percent perceived it to be the variability of return, 19.7 percent perceived it to be the probability of not being able to sell the project, and 4.5 percent provided other perceptions such as "probability of delay of payment which could lead to long court cases", and "probability of not being able to rent the space". While only 10.8 percent of the respondents perceived risk as being solely a "variability" or "chance" notion, 76.9 percent of the respondents perceived risk being solely a "downside" or "loss" notion.

4.4 Individual Project Planning and Control

Before beginning to work on a project, 97.1 percent of the respondents (N of 69) prepare cost estimates, 66.7 percent prepare a work schedule, 62.3 percent prepare a control budget, 49.3 percent prepare a cash budget, 13.0 percent prepare a pro forma balance sheet, 18.8 percent prepare a pro forma income statement, 18.8 percent prepare a resource levelling, and 20.3 percent prepare a break-even analysis. Only 1.4 percent of the respondents prepare none of the above management aids, and only 10.1 percent of the respondents prepare all of the above management aids. Thus, the emphasis of the respondents is on planning for the execution rather than the financial viability of a project.

57.4 percent of the respondents (N of 54) believe that the purpose of a cash budget for a construction project is to determine how much and when financing is needed, 38.9 percent believe that its purpose is to determine how and when the funds will be spent, 20.4 percent believe that its purpose is to determine when repayment of borrowed funds can be made, 14.8 percent believe that its purpose is to satisfy lender requirements, and 24.1 percent believe that its purpose is all of the above.

Various indirect costs can be considered in the preparation of the cash budget for a project. 78.7 percent of the respondents (N of 61) consider administration costs, 62.3 percent consider insurance costs, 57.4 percent consider site supervision costs, 47.5 percent consider professional fees, 31.1 percent consider taxes, and 4.9 percent consider other costs such as inflation. Interestingly, 22.9 percent of the respondents only consider one of these indirect cost categories, 21.3 percent consider two of these indirect cost categories, 24.5 percent consider three of these indirect cost categories, 16.3 percent consider four of these indirect cost categories, and 14.8 percent consider all five of these indirect cost categories. Thus, the respondents exhibit little consistency in their incorporation of various indirect costs into their cash budgets for projects.

Based on the mean responses, the respondents rated their estimates of costs to complete and the extent of progress towards completion for a typical project six months after work on it has commenced to be dependable (3.966 and 3.933, respectively). Identical numerical ratings were given to both types of estimates by 82.5 percent of the respondents.

Based on the chi-square values, the perceived dependability of the respondents' estimates of costs to completion for a typical project after work on it has commenced is positively associated with whether or not a cost

estimate is prepared before working on a project. However, the former is not associated with the respondents' perceptions of how well their businesses carry out the estimating and controlling of costs and progress functions, or with whether they develop and maintain a job cost information system for their projects, or with whether or not they utilize updated cost estimates or cost variance analyses as work on a project progresses, or with whether or not the criteria for measuring the operational efficiency of a completed project is whether actual project costs are within the budgeted cost estimates.

Based on the chi-square values, the perceived dependability of the respondents' estimates of progress to completion for a typical project after work on it has commenced is positively associated with whether or not the criteria for measuring the operational efficiency of a completed project is whether the project is completed within the planned time schedule. The former variable is not associated with how the respondents' perceptions of how well their businesses carry out on-site constructing and controlling of costs and progress functions, or with whether or not a work schedule is prepared before beginning work on a project, or with whether or not updated work schedules or work variance analyses are utilized as work on a project progresses.

The respondents were questioned on how they monitor the financial progress of a typical project. 38.6 percent of the respondents (N of 70) compare a forecast of the overall financial results to project completion or FY (fiscal year) based on results to date against initial expectations, 24.3 percent of the respondents use on-site observations, 22.9 percent of the respondents keep track of year-to-date financial results for the project through cost accounting procedures, and 21.4 percent of the respondents

compare year-to-date financial results for the project with estimated cost data or the control budget. While 18.6 percent of the respondents use all of these approaches to monitor the financial progress of a typical project, 12.9 percent of the respondents use none of these approaches to monitor the financial progress of a typical project.

The frequency at which the productivity (i.e., cost and schedule) of projects is measured during the construction phase varies among the respondents. Specifically, 25.7 percent of the respondents (N of 70) measure productivity at least weekly, 32.9 percent measure it monthly, 22.9 percent measure it at the completion of specific project milestones, 20.0 percent measure it at irregular intervals, 20.0 percent measure it at the same interval as the cost report because the latter incorporates productivity measures, and 1.4 percent never measure it. The total of these percentages exceeds 100 percent because 20.0 percent of the respondents use various combinations of the above frequencies when measuring the productivity of a project during the construction phase. Thus, how a BC decides on a specific frequency at which the productivity of projects is to be measured during the construction phase requires further study.

A number of methods are used by the respondents for assessing the progress or percentage-of-completion of a project. Specifically, 62.9 percent of the respondents (N of 70) use the cost-to-cost method (i.e., costs incurred to date divided by the estimated total costs), 12.9 percent use the effort expended method [i.e., units of resource effort expended to date (such as man hours) divided by the estimated total effort (such as total estimated man hours)], 31.4 percent use the units-of-work performed method [i.e., units performed (e.g., linear feet) divided by estimated total project units], 4.3 percent use other methods such as "cost actual/budget variance", and 4.3

percent do not assess the progress or percentage-of-completion of their projects. The cumulated percentages exceed 100 because 15.7 percent of the respondents use a combination of the methods to assess the progress or percentage-of-completion of their projects.

Based on the mean responses given in Table 4.3, subcontractor delays (3.415), followed by labour availability (3.235), are the most difficult aspects to control for in a typical project. Furthermore, according to the respondents, all of the other aspects are easy to control for in a typical project.

Based on the chi-square values, the level of difficulty of controlling job site progress for a typical project (the former variable) is associated with the level of importance of only two of the entity-specific factors given in Table 4.2. Specifically, the former variable is negatively and positively associated with the level of importance of the availability and cost of labour and subcontractor failure, respectively, in assessing the total risk of a specific project. In contrast, the former variable is not associated with the number of hours of on-site labour personally furnished by the respondent.

Based on the chi-square values, the level of difficulty of controlling material cost and material availability for a typical project are not associated with the importance attached to the entity-specific factor, availability and cost of materials, in assessing the total risk of a specific project. Similarly, the level of difficulty of controlling material use for a typical project is not associated with the level of importance attached to the entity-specific factors, actual material usage and material defects, in assessing the total risk of a specific project.

Table 4.3

Rating of the Difficulty of Controlling Various Aspects of a Typical Project

<u>Aspect</u>	<u>Difficulty*</u>					<u>N</u>	<u>Mean</u>
Job site progress	15	26	26	2	0	68	2.217
Material cost	13	25	21	7	1	67 ^a	2.373
Material availability	10	21	25	8	3	67	2.597
Material use	14	23	23	7	0	67 ^a	2.343
Labour costs	16	19	16	17	1	69	2.536
Labour availability	3	11	30	15	9	68	3.235
Tool and equipment costs	18	21	21	7	1	68	2.294
Subcontractor delays	5	8	18	23	11	65 ^a	3.415
Subcontractor requests for additional funds	13	14	25	7	5	64	2.641
Overhead costs	13	20	24	8	1	66	2.455

* Left and right limits of "one" and "five" are "extremely easy" and "extremely difficult", respectively.

^a Excludes one respondent who gave a multiple response.

Based on the chi-square values, the level of difficulty of controlling labour costs is negatively associated with the level of importance attached to the entity-specific factor, availability and cost of labour (the latter variable), in assessing the total risk of a specific project. In contrast, the level of difficulty in controlling labour availability is not associated with the level of importance attached to the latter variable in assessing the total risk of a specific project. Similarly, the level of difficulty of controlling tool and equipment costs is not associated with the level of importance attached to the entity-specific factor, availability and cost of equipment, in assessing the total risk of a specific project.

Based on the chi-square values, the level of difficulty of controlling subcontractor delays is positively associated with the level of importance attached to the entity-specific factor, subcontractor failure, in assessing the total risk of a specific project. Similarly, the level of difficulty of controlling subcontractor requests for additional funds is positively associated with the level of importance attached to the entity-specific factor, funding delays, in assessing the total risk of a specific project. In contrast, the level of difficulty of controlling overhead costs is not associated with the level of importance attached to the macro factors, general economic activity and interest rates, in assessing the total risk of a specific project.

Based on the mean responses given in Table 4.4, the actual rate of on-site construction is most dependent on the availability of labour (3.738), followed by the availability of material (3.641) and the subcontractors' schedules (3.446). It is least dependent on the rate of sale (2.536), followed by the financing schedule (2.714).

Table 4.4

Rating of the Dependency of the Actual Rate of On-site Construction with Various Factors for a Typical Project

<u>Factor</u>	<u>Dependency*</u>					<u>N</u>	<u>Mean</u>
The estimated work schedule	8	8	24	20	4	64	3.063
The rate of sale	13	13	20	7	3	56	2.536
The subcontractors' schedules	5	6	19	25	10	65 ^a	3.446
The financing schedule	13	13	21	11	5	63	2.714
The availability of material	3	4	20	23	14	64	3.641
The availability of labour	1	4	22	22	16	65	3.738

* Left and right limits of "one" and "five" are "not dependent" and "totally dependent", respectively.

^a Excludes one respondent who gave a multiple response.

The BCs were questioned on their use of seven management tools as work on a project progresses. Their responses can be summarized as follows: 76.8 percent of the respondents (N of 69) use updated cost estimates, 50.7 percent use an analysis of cost variances (labour, material and overhead), 46.4 percent use an updated work schedule, 31.9 percent use an updated budget of revenues and expenses, 23.2 percent use an analysis of work variances, 14.5 percent use an updated cash budget, and 14.5 percent use an analysis of cash variances. Interestingly, only 34.2 percent of the respondents use an updated cash and/or an updated budget of revenues and expenses, 56.8 percent use one or more of the types of variance analyses, and 88.6 percent use updated cost estimates and/or analyses of cost variances. Thus, the respondents appear to be oriented towards cost control as opposed to cash or profitability control.

Of the applicable respondents (N of 69), 91.3 percent develop and maintain a job cost information system for their projects. This system is generally manual for 53.6 percent of the respondents.

The respondents' (N of 67) choice of what best describes their job control systems differ. Specifically, the choice of 38.8 percent of the respondents is a monitoring system to provide timely feedback requiring actual performance compared to planned performance in order to assess the financial health of the project, the choice of 34.3 percent is a means to capture expenses as they occur and allocate them to the physical subelements of the unit considered, the choice of 26.9 percent is a method to develop a data bank of unit costs for future job estimating and planning, the choice of 23.9 percent is a management information system to gather data designed to aid in the control of project costs and progress, the choice of 20.9 percent is a means to evaluate potential profitability by projecting total costs

based on total costs incurred to date, and the choice of 14.9 percent is a method to record and summarize costs for financial statement generation.

From a list of potential common reasons for material variances, 50.9 percent of the respondents (N of 55) chose change in industry or market costs, 45.5 percent chose estimating errors, 25.5 percent chose lack of proper control, 14.5 percent chose wastage or obsolescence of inventory, 7.3 percent chose reporting error, 7.3 percent chose inefficient labour operations, and 5.5 percent provided other reasons such as "subcontracting delays" and "change of plans". From a list of potential common reasons for labour variances (N of 62), 58.1 percent of the respondents chose inefficient operations, 54.8 percent chose estimating errors, 35.5 percent chose lack of proper control, 25.8 percent chose change in industry or market costs, 16.1 percent chose reporting error, 6.5 percent chose wastage or obsolescence of inventory, and 4.8 percent advanced other reasons. The majority of the respondents (62.9 percent) chose at least two reasons from the list. For example, 14.5 percent of the respondents chose both estimating errors and inefficient labour operations.

The frequencies at which the respondents generate various reports/statements are given in Table 4.5 and can be summarized as follows. First, five reports (labour time report, labour cost report, indirect labour expense report, material report and subcontractor expense report) are generated at least monthly by at least 80 percent of the respondents. Second, most respondents generate financial statements on a monthly or longer frequency basis. Third, over 20 percent of the respondents never generate equipment time and equipment cost reports.

Table 4.5

**Frequency at Which Various
Reports/Statements are Generated**

Report/Statement	Frequency (%)						N
	Never	Weekly	Monthly	Quarterly	Annually	Other	
Labour time report	5.8	84.1	5.8	0.0	0.0	4.3	69
Labour cost report	3.0	47.0	42.4	0.0	3.0	4.5	66
Equipment time report	21.2	28.8	36.4	4.5	7.6	1.5	66
Equipment cost report	20.0	21.5	36.9	7.7	7.7	6.2	65
Indirect labour expense report	7.7	27.7	52.3	4.6	4.6	3.1	65
General overhead expense report	4.5	18.2	54.5	9.1	9.1	4.5	66
Material expense report	7.4	20.6	64.7	2.9	2.9	1.5	68
Subcontractor expense report	3.1	18.5	69.2	3.1	0.0	6.2	65
Project productivity report	6.3	29.7	45.3	12.5	0.0	6.3	64
Financial statements	1.5	4.6	36.9	16.9	36.9	3.0	65

4.5 Individual Project Success and Performance Evaluation

To measure the operational efficiency of a completed project, 77.1 percent of the respondents (N of 70) check whether or not total project costs are within their budgeted cost estimates, 72.9 percent check whether or not the project is completed within the planned time schedule, 70.0 percent check whether or not the profit earned on the project is acceptable, and only 10 percent check whether or not the ratio of actual final to budgeted total costs is within an acceptable ratio. For the respondents, this ratio varied between 1 and 5 percent. Interestingly, 37.3 percent of the respondents use all of the following criteria to measure the operational efficiency of a completed project: project is completed within the planned time schedule, total project costs are within the budgeted cost estimate, and the profit earned on the project is acceptable.

For a typical project, 16.7 percent of the respondents (N of 66) find that final (actual) costs are less than 85 percent of initial (estimated) costs, 40.9 percent find that actual costs are 85 to 95 percent of estimated costs, 28.8 percent find that actual costs are between 96 and 104 percent of expected costs, 3.0 percent find that actual costs are between 105 and 114 percent of expected costs, 1.5 percent find that actual costs are at least 115 percent of expected costs, and 7.1 percent do not know the relationship between actual and expected costs. Based on their self-perceptions, the majority of the respondents tend to systematically underestimate "true" costs.

Surprisingly, the amount and direction of actual cost escalation errors is not associated with the perceptions of how well the respondents carry out the estimating and controlling of costs and progress functions, with whether or not they prepare a cost estimate before beginning work on a project, with

their self-ratings of the dependability of their estimates of costs to complete after work on a project has commenced, with whether or not they utilize updated cost estimates or cost variance analyses as work on a project progresses, or with whether or not the criterion for measuring operational efficiency of a completed project is whether total project costs are within the budgeted cost estimates.

Based on the mean responses given in Table 4.6, the respondents find all of the six phases important to the eventual success or failure of a project. However, only 5.7 percent of the respondents consider all six phases as being extremely important to the eventual success or failure of a project. The planning phase (4.365), followed by the construction operations phase (4.254) and financial management and control (4.032), are the most important of the six phases. Interestingly, the respondents rate the initial (feasibility analysis) and final (marketing and selling) phases as being the least important of the six phases.

The level of importance of the financing phase on the eventual success or failure of a project is not associated with the respondents' perceptions of their credit ratings with the major banks, other financial institutions, suppliers of materials and subcontractors, or with whether or not they conduct a financial feasibility analysis to evaluate the feasibility of a potential project.

The level of importance of the financial management and control phase on the eventual success or failure of a project is not associated with whether or not the criterion used to measure the operational efficiency of a completed project is whether total project costs are within the budgeted cost estimate.

Table 4.6

Rating of Various Project Phases
According to the Importance of Their Impact
on the Eventual Success or Failure of a Project

<u>Phase</u>	<u>Importance *</u>					<u>N</u>	<u>Mean</u>
Feasibility analysis	1	9	20	14	14	58	3.534
Planning	0	1	5	27	30	63 ^a	4.365
Financing	6	5	15	20	16	62 ^a	3.565
Construction operations	0	1	8	28	26	63	4.254
Financial management							
and control	0	3	11	29	19	62	4.032
Marketing and selling	8	10	15	13	11	57	3.158

* The left and right limits of "one" and "five" are "not important" and "extremely important", respectively.

^a Excludes a respondent who gave a multiple response.

The level of importance of the marketing and selling phase (former variable) on the eventual success or failure of a project is positively associated with how often the respondents pre-sell their total developments. In contrast, the former variable is not associated with how often the respondents pre-sell a portion of their developments, or with whether or not they conduct a market/marketability analysis to evaluate the feasibility of a potential project.

4.6 Output Pricing and Sourcing Decisions

To determine the selling price of their product, 56.3 percent of the respondents (N of 16) rely on market forces (i.e., current and projected supply and demand), and 68.8 percent attempt to cover costs and earn a satisfactory profit. Surprisingly, nearly one-half (46.7 percent) of the respondents ignore market forces when determining the selling price of their product.

The selling price of their product is first determined during the feasibility study stage by 64.3 percent of the respondents (N of 14), during the engineering and planning stage by 35.7 percent of the respondents, during the construction phase by 14.3 percent of the respondents, and at the end of the construction phase by 14.3 percent of the respondents.

With regard to checking prices before placing an order for required materials, 60.9 percent of the respondents (N of 68) always check prices, 37.7 percent check prices if the cost from the first supplier approached seems excessive, 4.3 percent check prices if the purchase cost exceeds some fixed dollar amount, and 8.7 percent do not check prices because they usually deal with the same supplier.

When they decide to check material prices between various suppliers, 67.1 percent of the respondents (N of 70) normally solicit three prices prior

to placing an order, 18.6 percent normally solicit two prices, 8.5 percent normally solicit four prices, and 5.7 percent normally solicit five or more prices.

Before awarding a subcontract, 49.2 percent of the respondents (N of 69) always solicit competitive bids, 34.8 percent solicit competitive bids if the cost estimate from the first approached subcontractor seems excessive, 14.5 percent usually deal with the same subcontractors, and 1.4 percent solicit competitive bids only if the cost exceeds some fixed dollar value.

When they decide to solicit bids from potential subcontractors, 57.9 percent of the respondents (N of 64) solicit bids from three potential subcontractors, 17.2 percent solicit bids from two potential subcontractors, 15.6 percent solicit bids from five or more potential subcontractors, and 9.4 percent solicit bids from four subcontractors.

Although 7.2 percent of the respondents (N of 69) usually work with verbal "contracts" which are concluded with a handshake, 89.9 percent of the respondents normally sign fixed-price contracts with subcontractors, 5.8 percent normally sign contracts with a fixed-price-plus-fixed-allowable-variations with subcontractors, 4.3 percent normally sign cost-plus contracts with subcontractors, and 1.4 percent normally sign fixed-fee-plus-costs contracts with subcontractors. Thus, most respondents attempt to eliminate the uncertainty associated with the cost of their subcontracts.

4.7 Working Capital and Risk Management

Discounts offered by suppliers are taken advantage of with a 100 percent frequency by 50.7 percent of the respondents (N of 67), with a 75 to 99 percent frequency by 17.9 percent of the respondents, with a 50 to 74 percent frequency by 4.5 percent of the respondents, with a 1 to 49 percent frequency

by 20.9 percent of the respondents, and never by 6.0 percent of the respondents.

The average elapsed time between the receipt and payment of supplier invoices and other obligations varies from 1 to 60 days, and averages 32.9 days. Thus, the respondents (N of 65) do not "stretch" their accounts payable.

The sample of BCs were asked how often they used each of 16 techniques for risk management. Based on their mean responses given in Table 4.7, only two techniques are used fairly often if "not applicable" and "never" responses are combined. These two techniques are the use of fixed-price subcontracts (4.362) and equipment rental and leasing (3.016). Two additional techniques can be considered to be used fairly often if "not applicable" responses are deleted from the mean calculations. These two techniques are procurement of insurance (4.000) and phased development of project (3.130). Thus, the respondents do not use many of the common risk management techniques frequently.

Based on the chi-square and gamma values, the usage rate of fixed-price subcontracts is positively associated with the usage rate of discounts offered by suppliers, and the rate of equipment rental/leasing usage is positively associated with the average elapsed time between receipt and payment of supplier invoices and other obligations.

Based on the chi-square values, the rate of usage of forward prices for goods and services is not associated with the importance of the rate of inflation in the assessment of the total risk of a specific project, the rate of usage of insurance is not associated with the importance of accidents on the job site in the assessment of the total risk of a specific project, the rate of usage of financial futures to hedge interest rate risk is not

Table 4.7
Frequency of Use
of Various Risk Management Techniques

Technique	NA	Use *						N	Mean 1**	Mean 2**
Fixed-price subcontracts	1	1	1	7	18	41	69	4.362	4.426	
Forward prices for goods and services	24	8	6	14	5	6	63	1.778	2.872	
Joint ventures	35	7	10	8	1	1	62	0.968	2.222	
Procurement of insurance	18	2	1	14	4	22	61	2.820	4.000	
Financial futures to hedge interest rate risk	33	9	7	9	4	0	62	1.065	2.276	
Diversification by product line (i.e., residential, commercial, etc.)	30	6	4	14	3	4	61	1.443	2.839	
Diversification by geographic region	34	7	8	9	0	3	61	1.066	2.407	
Diversification by political jurisdiction	47	9	2	3	0	0	61	0.361	1.571	
Land purchase options	36	8	6	6	5	1	62	1.016	2.423	
Hold inventory of land	37	9	0	7	6	2	61	1.049	2.667	
Holding revenue-producing properties to stabilize cash flows	33	11	1	9	4	4	62	1.226	2.621	
Equipment rental/leasing	7	4	4	23	12	11	61	3.016	3.407	
Started another business to reduce exposure to (potential) claims by outside parties	42	8	2	5	3	2	62	0.790	2.450	
Pre-selling of total development	36	6	8	3	4	3	60	1.033	2.583	
Pre-selling of portion of development	35	6	6	5	3	3	58	1.034	2.609	
Phased development of project	38	1	4	13	1	4	61	1.180	3.130	

* Left and right limits of "one" and "five" are "never" and "always", respectively.

** Mean 2 excludes "NA" observations, mean 1 includes "NA" observations as "never" observations.

associated with the importance of interest rates in the assessment of the total risk of a specific project, the rate of usage of diversification by political jurisdiction is not associated with the importance of government regulations in the assessment of the total risk of a specific project, and neither the rates of usage of land-purchase options nor holding an inventory of land are not associated with the importance of land costs in the assessment of the total risk of a specific project. Similarly, neither the rate of usage of diversification by product line nor geographic region are associated with the percentage of total personal net worth invested in contracting/construction business interests. In contrast, the rate of usage of starting another business to reduce exposure to (potential) claims by outside parties is negatively associated with the legal form of their principle contracting/construction businesses. Specifically, the rate of usage decreases if the legal form is corporate instead of proprietorship/partnership.

4.8 Financing

With regard to the source of funds, 41.2 percent of the respondents (N of 68) use their pool of funds (i.e., do not tie their financing with any particular project), 29.4 percent finance on a project-by-project basis, 17.6 percent finance both from their pool-of-funds and on a project-by-project basis, and 11.7 percent provided other responses such as "client" and "by ourselves".

As suppliers of working (short-term) capital, 83.6 percent of the respondents (N of 61) use the banks, 27.9 percent use subcontractors, 23.0 percent use suppliers, 11.5 percent use financial institutions other than banks, 8.2 percent use business associates, and 8.1 percent use other sources [such as government grants/assistance programs (1.6) and venture capitalists

(1.6)]. As suppliers of permanent (long-term) capital, 54.7 percent of the respondents (N of 53) use the banks, 24.5 percent use other financial institutions (such as mortgage and insurance companies, and trusts), 15.1 percent use business associates, 5.7 percent use venture capitalists, 5.7 percent use friends and relatives, and 5.7 percent use other sources [such as government grants/assistance programs (1.9 percent), subcontractors (1.9 percent), and "buyers"].

Debt financings are usually secured by a pledge of the assets of their entities for 62.7 percent of the respondents (N of 67), by a pledge of personal assets (such as a principal residence of an owner) by 25.4 percent of the respondents, by a pledge of both their personal assets and the assets of their entities for 23.9 percent of the respondents, and by a third party guarantee for 4.5 percent of the respondents. Furthermore, 16.4 percent of the respondents provided various combinations of the above responses, and 7.5 percent of the respondents reported that their debt financings are unsecured.

Normally, 83.6 percent of the respondents (N of 67) seek funds from the same banks and only go to other banks if the first bank refuses, and only 13.4 percent of the respondents comparison shop for the best terms initially. Thus, most respondents exhibit a high degree of customer loyalty to their traditional lenders.

Based on their experiences, 83.8 percent of the respondents are typically required to provide historical financial statements for their businesses to lenders, 39.7 percent are typically required to provide historical information on each owner's personal assets, liabilities, net worth and net income to lenders, 27.9 percent are typically required to provide pro forma financial statements for their businesses to lenders, 22.1 percent are typically required to provide cash budgets for their businesses

to lenders, and 4.4 percent are typically required to provide other information such as "credit research" to lenders. Surprisingly, only 35.3 percent of the respondents are typically required to provide financial information about the future (such as pro forma financial statements or cash budgets) to lenders, and only 33.8 percent of the respondents are typically required to provide historical financial statements for their businesses and historical information on their own personal assets, liabilities, net worth and net income.

Based on the chi-square values, whether pro forma financial statements are typically required by lenders is not associated with whether pro forma financial statements are prepared before the respondents work on a project. In contrast, whether cash budgets are typically required by lenders is positively associated with whether cash budgets are prepared before the respondents work on a project.

Based on the mean responses given in Table 4.8, the average self-rated credit rating for the respondents for four suppliers of funds is above-average. Nevertheless, a significant number of the respondents have a low self-rated credit rating with each of the four suppliers of funds. Based on the chi-square values, the level of the self-assigned credit ratings with the major banks is positively associated with the self-assigned level of satisfaction of the relationship with lenders in general. In contrast, the level of self-assigned credit ratings with the major banks is not associated with whether lenders typically require historical information on the owners' financial positions (i.e. personal assets, liabilities, net worth and net income), or with the proportion of annual net income plus owner drawings which is usually retained by their businesses.

Table 4.8

Credit Rating with Various Suppliers of Funds
Based on the Creditors' Perceptions

<u>Supplier of Funds</u>	<u>Rating*</u>					<u>N</u>	<u>Mean</u>
Major banks	7	1	11	19	29	67	3.925
Other financial institutions	10	3	6	12	16	47	3.447
Suppliers of materials	4	2	10	14	28	58	4.034
Subcontractors	5	4	10	13	26	58	3.879

* Left and right limits of "one" and "five" are "low" and "high", respectively.

Approximately 60.9 percent of the respondents (N of 64) retain at least 51 percent of their annual income plus owner drawings (such as owner salaries, personal expenses, etc.) in their businesses. Furthermore, while the retention rate is at least 76 percent for 50 percent of the respondents, it is ten percent or less for 14.1 percent of the respondents.

4.9 Lender Relationships

The respondents describe the attitude of the financial institutions which their businesses have approached for debt financing as follows: 79.4 percent of the respondents (N of 68) felt that these institutions take the request as being important, 29.4 percent felt that these institutions make too many security demands, 5.9 percent felt that these institutions make too many informational demands, 2.9 percent felt that these institutions want too much of a spread over prime, and 2.9 percent provided other responses. A minority (14.7 percent) of the respondents provided multiple responses. The most prevalent multiple response included "they take the request as being important" and "they make too many security demands".

60.3 percent of the respondents (N of 68) describe the relationship between their business and their major lenders as being friendly and formal, 20.6 percent describe it as being friendly and informal, 14.7 percent describe it as being impersonal and business like, 2.9 percent describe it as being strained. Similarly, their relationships with lenders in general are described by 37.9 percent of the respondents (N of 66) as being excellent, by 43.9 percent of the respondents as being good, by 15.2 percent of the respondents as being average, by 1.5 percent of the respondents as being fair, and by 1.5 percent of the respondents as being poor.

4.10 Financial Results

The fiscal year-ends of the respondents' (N of 70) primary contracting/construction businesses vary as follows: 37.1 percent have a December 31 year-end, 8.6 percent have a June 30 year-end, and 54.3 percent have some other year-end (such as February 28, April 30, September 30 and November 30). To recognize revenue, 59.7 percent of the respondents (N of 67) use the completed contract method, 32.8 percent use the percentage of completion method, and 7.5 percent use some other method such as the "sale of a building".

The majority of the respondents did not reveal their financial results as is evident from Table 4.9. Based on their responses for their last FY, the median respondent is small in terms of total assets (\$1.2 million), at-cost construction activity (\$1.6 million), total revenues (\$2.5 million), and net income plus owner drawings (\$240 thousand).

Based on the information supplied for the latest fiscal period, two measures of liquidity (current and quick ratios), one measure of activity (turnover ratio), one measure of debt (debt-to-net worth ratio) and three measures of profitability (margin, return on total assets and return on net worth) were calculated for the respondent entities. The characteristics of the average and typical entities, which are given in Table 4.10, can be summarized as follows. First, although both entities are reasonably liquid, the average entity is more liquid than the typical entity. Second, the average entity has a higher level of turnover than a typical entity. Third, the average entity is substantially more highly levered than the typical entity. Fourth, while the values for the two measures of profitability (namely, margin and return on total assets) are high for the average entity, they are quite low for the typical entity. Fifth, the return on net worth is

Table 4.9

Financial Results for the Responding Contracting/Construction Businesses
(thousands of dollars)

	<u>Third to Last FY</u>	<u>Second to Last FY</u>	<u>Last FY</u>	<u>Projected Current FY</u>
Total assets				
Minimum	0	3	35	50
Maximum	20,000	30,257	74,917	35,000
Mean	3,863	6,316	7,826	6,098
Median	819	1,118	1,200	1,475
N	16	17	19	15
Construction activity (at cost)				
Minimum	0	6	200	80
Maximum	22,000	29,700	27,500	33,000
Mean	4,854	6,823	5,942	6,646
Median	2,800	3,000	1,625	2,000
N	15	17	18	17
Total revenues				
Minimum	10	10	62	108
Maximum	52,000	69,000	64,000	70,000
Mean	6,153	7,779	8,102	9,232
Median	2,700	3,000	2,513	3,000
N	25	28	30	27
Net income plus owner drawings (salaries, personal expenses, etc.)				
Minimum	1	(950)	(1,000)	30
Maximum	3,400	6,686	6,300	3,400
Mean	689	1,009	964	1,077
Median	103	200	240	203
N	16	17	19	16

Table 4.10

**Seven Measures of Financial Performance
for the Most Recent Fiscal Period**

<u>Measure^a</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>	<u>N</u>
Liquidity:				
Current ratio	2.576	1.225	5.568	32
Quick ratio	2.244	1.000	5.155	32
Activity:				
Turnover	2.881	1.914	4.474	18
Debt:				
Debt-to-net worth	1.621	0.833	2.067	27
Profitability:				
Margin	0.310	0.055	0.518	19
RTA	0.536	0.067	1.479	15
RNW	0.029	0.003	0.079	13

Legend: Current ratio = current assets/current liabilities
 Quick ratio = (current assets-inventory)/current liabilities
 Turnover = total revenue/total assets
 Debt-to-net worth = total debt/net worth
 Margin = net income plus owner drawings/total revenues
 RTA = net income plus owner drawings/total assets
 RNW = net income plus owner drawings/net worth

low for both the average and the typical entity (2.9 and 0.3 percent, respectively).

4.11 Asset and Financial Structure

Some summary measures for various asset, liability and net worth accounts expressed as a percentage of total assets for the latest fiscal year-ends are given in Table 4.11. Interestingly, current assets and net worth represent approximately 73.0 and 26.1 percent of total assets, respectively, for an average entity.

4.12 General Characteristics of the Building Contracting/Construction Businesses

The legal form of the principle contracting/construction businesses was a corporation for 84.5 percent of the respondents (N of 71), a sole proprietorship for 11.3 percent of the respondents, and other (e.g., general or limited partnership) for 4.2 percent of the respondents. Only 12.5 and 32.8 percent of these businesses were formed during the past five and ten years, respectively. Eight percent of the 64 responding businesses were formed before 1950, 9.6 percent were formed during the 1950s, 25.2 percent were formed during the 1960s, 25 percent were formed during the 1970s, and 32.8 percent were formed during the 1980s.

Based on total annual gross revenues, only 55.9 percent of the respondents (N of 68) were currently engaged primarily in only one of the categories used by Statistics Canada for the construction industry, and only 33.9 percent were currently engaged primarily as a residential developer and/or residential general contractor. Of the 59 respondents who considered themselves to be general contractors and/or developers, 10.2 percent were currently engaged primarily with only residential based on total annual gross revenues, 25.5 percent were currently engaged primarily with residential and

Table 4.11

Some Summary Measures for the Common Size Balance Sheets
for the Latest Fiscal Year-ends

	<u>Max.</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>
Current Assets				
Cash	85.0	22.7	20.1	34
Accounts receivable	89.0	38.6	32.3	34
Inventories	20.0	3.4	0.7	34
Other	75.0	8.3	1.0	34
Fixed Assets				
Unfinished buildings	59.0	10.2	0.5	35
Unsold finished buildings	20.0	1.1	0.2	35
Revenue-producing buildings	84.2	8.4	0.1	35
Tools & equipment	20.0	4.4	2.9	35
Storage yard & plant	10.0	0.8	0.2	35
Other	30.0	3.5	0.2	34
Current Liabilities				
Accounts payable	86.0	38.9	37.3	32
Short-term loans	40.0	11.3	9.7	32
Other	49.0	4.4	0.2	32
Long-term Liabilities	75.0	16.0	3.0	33
Net Worth	97.0	26.1	20.2	32

non-residential, and 64.3 percent were currently engaged primarily with non-residential.

During any particular fiscal year during the past five years, a typical respondent started between 2.0 and 4.0 residential projects, and completed between 1.0 and 4.0 residential projects. During the same time period, a typical respondent started between 4.0 and 10.0 non-residential projects, and completed between 5.0 and 13.0 non-residential projects.

During the most active part of the year, a typical respondent has 10.0 full-time and 4.0 part-time employees on staff. During the least active part of the year, a typical respondent has 6.0 full-time and 2.0 part-time employees on staff. These responses vividly demonstrate the seasonal nature of employment in this industry.

The books are kept by an employee for 51.4 percent of the respondents (N of 70), by the owner for 17.1 percent of the respondents, by an external accountant for 14.3 percent of the respondents, by a family member of the owner for 10.0 percent of the respondents, and by some other party (such as a family friend) for 7.1 percent of the respondents.

The respondents (N of 65) have between 0 and 8, and average 1.6 building contracting/construction businesses which are currently active. Furthermore, 61.5 and 18.5 percent of these respondents have only 1 and 2 currently active building contracting/construction businesses, respectively. Most (84.1 percent) of the respondents (N of 69) have no currently inactive building contracting/construction businesses. Of those that do, 9 respondents have one inactive business, one has three inactive businesses, and one has five inactive businesses. Only two of the respondents (N of 69) currently have a building contracting/construction business that is wound down or defunct.

4.13 General Characteristics of the Principle Owner/Manager

With regard to ownership interest, 83.8 percent of the respondents are major owners, partners or shareholders of the surveyed businesses, and 7.4 percent are minor owners, partners or shareholders of the surveyed businesses. With regard to management, 14.7 percent of the respondents are the chief decision makers for operations, and 5.9 percent are the chief financial officers of the surveyed businesses.

The respondents are predominantly male, and their ages are distributed as follows: 15.7 percent are below 35 years old, 17.1 percent are 35 to 44 years old, 35.7 percent are 45 to 54 years old, 30.0 percent are 55 to 64 years old, and 1.4 percent are at least 65 years old. With regard to highest level of education attained, 33.3 percent of the respondents have completed undergraduate studies, 26.0 percent have completed trade or vocational school studies (e.g., "quantity surveyor"), 13.0 percent have completed high school, 10.1 percent have completed graduate studies (e.g., "electrical engineering" and "graduate engineering"), 10.1 percent have completed CEGEP (e.g., "computer Science" and "construction"), 4.3 percent have completed elementary school studies, and 2.9 percent have completed other studies.

Prior to their current business involvement, 33.3 percent of the respondents (N of 69) were involved in the construction industry as a labourer for periods of between 2 and 25 years (mean of 10.9 years), and 17.6 percent were involved in the construction industry as a foreman/superintendent for periods of between 2 and 20 years (mean of 7.9 years).

Thirty-three respondents indicated that they had owned or managed a previous contracting/construction business. This business was a corporation for 60.6 percent of the respondents, a sole proprietorship for 27.3 percent of the respondents, and a general partnership for 6.1 percent of the

respondents. The reasons given for leaving these previous businesses (N of 32) are as follows: 50.0 percent left because they decided to be on their own, 18.8 percent left because they decided to join with others, 21.9 percent left because these businesses failed or became inactive, and 9.4 percent left for other reasons (such as the previous business changed its line of endeavour or geographic locale).

Less than one-half (43.5 percent) of the respondents (N of 69) personally furnish on-site labour to their contracting/construction businesses. The number of hours per week of such "work with their hands" is distributed as follows: 56.5 percent provide 0 hours, 11.5 percent provide 1 to 9 hours, 5.8 percent provide 10 to 19 hours, and 26.0 percent provide 20 or more hours.

Some summary statistics on the percentages of total personal net worth of the principle owners, which is represented by various asset classes, are given in Table 4.12. Based on the mean values, 49 percent of the net worth of the respondents consists of their contracting/construction business interests, and 77.7 percent consists of their investments in the real estate industry. Thus, as expected, the respondents hold poorly diversified personal investment portfolios.

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Table 4.12

Percentages of Total Personal Net Worth of the
Principle Owners Represented by Various Asset Classes

<u>Asset Class</u>	<u>Max.</u>	<u>Mean</u>	<u>Median</u>	<u>N</u>
Contracting/construction business interest	100.0	49.0	49.6	43
Other income-producing property	70.0	11.7	0.4	43
Non-real estate business interests	80.0	7.1	0.3	43
Personal residence(s)	89.0	17.0	7.0	43
Stocks	50.0	6.7	0.1	43
Bonds/bank accounts/certificates/etc.	50.0	7.5	0.2	43
Other	10.0	1.0	0.3	43

Some summary statistics on the percentages of total personal net worth of the principle owners, which is represented by various asset classes, are given in Table 4.12. Based on the mean values, 49 percent of the net worth of the respondents consists of their contracting/construction business interests, and 77.7 percent consists of their investments in the real estate industry. Thus, as expected, the respondents hold poorly diversified personal investment portfolios.

5. PERSONAL INTERVIEW RESULTS

5.1 Builders and Developers

According to the interviewees, the typical progression in residential construction is from builder to developer. A builder purchases the lots, puts up two or three model homes, and then builds as the houses are sold. In contrast, a developer buys raw (or unserviced) land, changes the land's zoning (if required), provides service (if required), and either sells the serviced land (for example, to a builder) or builds on the serviced land for resale. Some specific comments offered by the interviewees include:

"One becomes a builder first. Then one becomes a developer to cut out the middleman."

"A small builder does 10 to 12 houses worth one to two million dollars per year. A medium-sized builder puts up 2 or 3 model homes and sells 40 or 50 houses a year. A medium-sized builder takes on more risk. However, his only speculation is for those two or three model homes."

"A developer is like a conductor. His major role is to make sure that all runs smoothly."

Generally, professionalism, reliability and risk exposure increase as the size of the builder or developer increase. Also, developers typically incur more risk than builders in that they are involved in more speculative residential construction. Both builders and developers typically bear more

risk than general contractors. Some specific comments offered by one of the interviewees is as follows:

"Smaller outfits are less professional and reliable. Also, while a developer has exposure in all phases, the builder's exposure is more limited and the general contractor's exposure is different."

Perceptions of profitability associated with involvement in the residential construction market differ by entity. Some specific comments offered by the interviewees include:

"The biggest profit is in land."

"The net profit margin for a builder should be 35 percent, and as high as 100 percent. Many builders take money on the side."

"Our business is characterized by low profit margins given the risks we assume."

5.1.1 Nature of Competition

The building and developing sectors of residential construction are very competitive. Generally, reliability, service, cost and quality tend to increase with entity size, and efficiency tends to decrease with entity size. Also, the market (demand) is fragmented and difficult to assess and satisfy. Some specific comments offered by the interviewees are given in Exhibit 5.1.

5.1.2 Start-ups

According to the interviewees, a typical start-up has been and still is small and thinly capitalized, and its management is thin, deficient in financial matters and oriented towards crisis management. These characteristics are aptly described by two interviewees in Exhibit 5.2.

5.1.3 Land Acquisition

Generally, small- and medium-sized builders and small-sized developers buy and consume land within a short time horizon (i.e., within one year). Large-sized builders and medium- and large-sized developers tend to hold an

Exhibit 5.1

Specific Comments of the Interviewed Builders and Developers on the Nature of Competition in the Building and Developing Sectors of Residential Construction

"It is hard to compete with fly-by-nights. They use your drawings. They build cheaper. They use cheaper materials and jobbers."

"Smaller builders use draftsmen instead of architects. They offer lower prices, and lower quality."

"I prefer commercial. It is less hostile, easier and more professional. Residential has higher risks and higher returns."

"If you are new, you should not start in new developments. For such projects, the money is made by the large guys. The small guy should begin with renovations."

"I am not interested in residential construction. Trends change too fast. Customers are too particular."

"We are moving out of residential, especially the lower end of the market. The market is becoming more demanding and buyers are doing more shopping. At the high end, buyers are less sophisticated and are willing to accept more conditions."

"The business is becoming more competitive. The very small developer will be squeezed out."

Exhibit 5.2

Typical Start-ups According to Two Interviewed Builders and Developers

"I was approached by a person with land over twenty years ago. He said he would help arrange financing. I bought two lots by putting up a two thousand dollar deposit on each lot. I only had two thousand dollars for construction. I started the two houses with no mortgage. One and a half months later, I still had no mortgage because there were five or six bankruptcies at that time. The supplier of building materials took me aside and told me he was not worried because he would end up with the houses if I failed. By luck, I got a mortgage from [lender]. Within a year, I had borrowed one-half million dollars from [lender]. In the beginning, I did A to Z. I was on the job site where I worked 18 hours a day. I did office work at the beginning and end of each day. If you start out with poor financial backing, you have to work disorganized."

"I started about ten years ago. For the first house, I did an informal analysis of price. The project consisted of about 20 houses and the land had to be divided and subdivided. I bought the land using a balance of payment. All the work was done by subs, and I dealt with the day-to-day operations which screamed the loudest. Forget planning, I did none. I became more systematic as volume increased. I studied financial aspects as I went along. I picked subs based on personal contacts. I got caught during a seasonal peak when no subs were available. There was a big change in my management style when I got a partner and micros appeared."

inventory of land. Whether the inventory of land should be large or small is a matter of some debate. The net benefits of holding land in inventory depend on whether the annual escalation in the price of the land exceeds the annual carrying cost of the land, and how the land purchase is financed. For example, holding an inventory of raw land is attractive if it is entirely equity financed with other people's money (OPM). Some specific comments offered by the interviewees are given in Exhibit 5.3. The difficulties caused by not having a land bank when land prices have escalated are aptly stated by an interviewee as follows:

"When we started, a 15 to 20 percent downpayment was required. Now it is much harder to do business because you need a lot of money. Not only have land prices gone up a lot but the required downpayment is 50 to 60 percent. Also, a lot of fly-by-night builders are willing to pay inflated prices for the available land."

5.1.4 Assessment of the Feasibility of Individual Projects

Most interviewees feel that no formal or systematic analytical framework is required to assess the feasibility of individual projects. Since their expected time horizon (reversion point) is short, they feel that accurate estimates are required for only construction (and soft) costs and selling prices. Thus, most interviewees conduct a detailed and careful estimation of costs and an ad hoc market study. Some specific comments offered by the interviewees are given in Exhibit 5.4.

5.1.5 Estimation of Costs

According to the interviewees, the estimation of costs is crucial to success in the residential construction industry. Thus, most interviewees "systematically and carefully" estimate costs for new construction projects. Although such estimates are often based on preliminary plans, most interviewees feel that their cost estimates are reasonably accurate.

Exhibit 5.3

Specific Comments of the Interviewed Builders and Developers on Land Acquisition

"A small builder buys and consumes immediately. A small builder goes by actual demand and is not for a land bank because it ties up scarce capital."

"We own land although land can kill you. If you pay a high price, carrying costs can kill you. For example, a one million dollar land purchase requires a one hundred thousand dollar deposit. If you pay top price and maximum taxes, you might have been better off delaying purchase and waiting for the cycle to improve. Land carrying costs may be 20 percent annually; that is, ten percent for financing and ten percent for other."

"We have an inventory of land of about ---. Land holdings may be good or bad on a case-by-case basis. There are carrying costs associated with holding land."

"We have a land bank. Those that do not have a land bank can not afford to buy land. Due to competition, one can not afford to buy land for development at market. Having land allows for planned developments and keeps competitors at bay... Developers are picking up more and more of service taxes, although lenders are willing to add service costs on an amortized basis to mortgage servicing."

"We buy land because it is the raw material of our industry."

"We have land holdings because we feel that it is a wise and good strategy. We buy the land with individuals who are willing to invest in raw land."

"We have a land bank with two partners who put up the cash."

"We set up separate firms to buy and finance the land purchases. We use private investors, both domestic and foreign, for this purpose."

"We rarely use options on land. We purchase using a five-year balance of sales and immediately sell one-quarter to one-half of the land at a higher price to our stable of investors to recover our invested funds. Then we subdivide and sell the rest or we may develop the land if the area becomes hot." [developer and promoter].

"We actually pay for the land only when we have a buyer and his down payment. We also arrange the client's payments with the cash outflows which will be required to complete the project. We invest no funds. As back up, we have a line of credit."

Exhibit 5.4

Specific Comments of the Interviewed Builders and Developers on the Assessment of the Feasibility of Individual Projects

"We fill in a chart for each potential project that includes hard and soft costs. The construction costs are estimated on a per square foot basis. We do a comparative study of the market to determine what other comparables are selling at in the designated area. Our feasibility study is simple. We do no cash flow analysis. We project costs and revenues over a 1 1/2 to 2 year evaluation horizon. We only use most likely forecasts because using the worst case can be misleading."

"We look at market conditions, past and present. We look at interest rates and the economy. We do projections and pro formas. For us, location is most important. We first study the micro environment and then the macro environment (that is, the town and surrounding town)." [large developer].

"My architect and design partner looks at market needs. What is in the area. Income/age groups. Existing stock and its price range. I do the financial feasibility myself. I know costs per square foot and the trades. I try to minimize subtrade costs. For larger projects, we would do it differently. The nature of our financial analysis changes from project-to-project."

"Location, location, location is crucial. The appreciation of [the value of the] total project will depend on location. We do studies which are contracted out. We do market and financial feasibility analyses, especially for big projects, because the banks like to see them." [medium-sized developer].

"We do a market study by snooping to determine price and costing. We prepare no cash flows or pro formas."

"Although we have done our studies outside in the past, we now do our own studies. External studies just confirmed what we knew or they were out of the ball park. We choose a location and ask people about the area. We concentrate on the market study. I do the study of financial feasibility in my head."

"Studies are generally crap because it is hard to make meaningful projections."

"I visit the land and check trends, and if there is speculation. I look for speculation by particular persons, such as market leaders and trend setters. Some are people laundering money. I check if demand is there. We cater to yuppies (airheads) who are only trying to impress their friends. I do a market study of land prices by checking what was sold and to whom. I take my staff and family to look at model homes to observe their likes and dislikes. I also do quick budgets for any potential development." [developer and promoter].

Exhibit 5.4 (cont'd)

"My choice is based on a feeling and not on a market study. I use rules-of-thumb based on logic. I know my markets well. All studies are based on historical data. If you make a mistake, it can kill you." [small-sized developer].

However, the interviewees do differ in their consideration of soft costs, the use of computerized estimation programs, and the use of external information for cost estimation. Some specific comments offered by the interviewees are given in Exhibit 5.5.

5.1.6 Risk Assessment

The interviewees considered risk to be either downside exposure or unexpected events that have not been hedged or laid off to other parties. Developers perceive themselves as bearing more risk than builders, who, in turn, perceive themselves as bearing more risk than general contractors. Some specific comments offered by the interviewees are given in Exhibit 5.6.

5.1.7 Risk Management

Techniques used by the interviewees to manage risk include pre-selling or pre-leasing, joint venturing, establishment of separate companies for each project, and diversification. The importance of risk management was aptly stated by an interviewee as follows:

"When you have nothing to protect, one is more reckless. When you have something, you try to protect yourself."

Some of the specific comments offered by the interviewees on pre-selling or pre-leasing, joint venturing, establishing separate companies for each project, and diversification are given in Exhibit 5.7. Other risk management techniques identified by the interviewees include:

"We phase the project based on the risk factor, which we measure as dollars spent divided by return as measured by payback."

"I attempt to lower price by appealing to nonconformities and illegal views. I structure the contract in my favour. I do a credit check to determine if I can squeeze the seller."

"We move from one type of construction project to another type of project depending upon the point in the market cycle."

Exhibit 5.5

Specific Comments of the Interviewed Builders and Developers on the Estimation of Costs

"Many developers do not put in cost of money or reserves for income taxes."

"We enter all historical job cost data into the computer. This data is used for cost estimation for new projects."

"Since costs can escalate above estimates after construction on a house has started, all good builders embed contingencies for all unexpected events."

"Our estimates are computerized. The computer generates base estimates based on past experience. Approximately one-half of the base estimates for the cost items are generally overridden for a typical project. The computer program utilizes Lotus 1-2-3."

"We do a little sensitivity analysis on costing. We run a pessimistic scenario."

Exhibit 5.6

Specific Comments of the Interviewed Builders and Developers on Risk Assessment

"We do not assess risk. Since our business is cyclical, you need sufficient financial capacity to survive a trough in the cycle."

"Risk is downside risk based on your basic exposure which is carrying costs, base cost of land and base cost of soft costs before you see a house. Since 25 percent of total costs can be incurred before you see a house, risk is high for any developer."

"Risk is speculative building. For example, for our last residential condo we did not presell. We evaluated the risk and concluded that it would be profitable if we did not incur any cost overruns. Our bank thought that we were crazy. Fortunately, 92 percent of the condos were sold by the time our project was completed."

"Risk is a job coming in over costs. Risks are delays and their chain reaction effect."

"A developer takes all the risk on both ends. If any client does not pay, I have to go to court. Three years later I might get paid. If I do not pay my subs, they can place a lien on my project within two hours. If I try to get a sub to correct certain deficiencies, it can take months if business is good."

Exhibit 5.7

Specific Comments of the Interviewed Builders and Developers on Various Risk Management Strategies

Panel A: Pre-selling or Pre-leasing

"We do not build on spec. Therefore, our exposure is the discount on five model homes. This is about 15 times 5, or 75 thousand dollars. For condos, we do not start construction until we have about 50 percent pre-sold."

"We pre-sell before construction to minimize risk." [three interviewees].

"We are somewhat speculative. We average 40 percent pre-sold before beginning construction. We have done a project with nothing pre-sold."

Panel B: Joint Venturing

"We joint venture to share risk. However, your partner's wishes are important. It makes decision-making slower."

"We had one 50/50 joint venture which did not work out. We differed in how to do the project."

"I venture with different partners. For example, I have one partner for residential construction, another for commercial construction."

Panel C: Establishment of Separate Companies

"We manage risk by project by forming a limited company for each project. I have never kept a company. I would rather start fresh. The only advantage to keep a company is if one wants to grow into a large company. However, if you always set up new companies, you have to market the individual developer and not the company."

"We set up a separate limited company for each project. The major reasons are taxation (or fiscal) and legal claims."

"We form new companies for new ventures. They are formed for tax laws and liability."

"For the residential market, we set up a new company for each development."

"Some people form a new company for each project. We only form new companies for large projects to deal with risk and taxes. As you have more companies, business becomes more complicated because the

Exhibit 5.7 (cont'd)

companies are interconnected. Also, you can spend a lot of money on administration of these companies."

Panel D: Diversification

"We go into new areas. However, we acquire knowledge before doing so. I live in the area for awhile to learn about it and to get the pulse of the area."

"We do one project at a time. I diversify across other types of endeavours. For example, I own a shoe factory."

"I dabble here and there. I believe in a lot of diversification."

"I have diversified into electronics production, residential, etc. We work on anything that looks good. One has to react to opportunities."

"We tried diversification to moderate the construction cycle but it did not work out. We stay in Montreal because it is the market we know best."

"I do not tie up a large part of my personal wealth in the business."

5.1.8 Prework Preparation

Most of the interviewees prepare a project budget and work schedules before starting to work on a project. Some specific comments offered by the interviewees include:

"We prepare work schedules before starting a project. We formulate a project budget."

"We prepare a budget before starting on a project. We modify it as the project progresses."

5.1.9 Site Control

Most of the interviewees actively manage their job sites individually or through their representatives (i.e., superintendents, foremen or on-site engineers). Project success depends upon the nature and quality of the monitoring of the builder's or developer's agents on the site (i.e., the subtrades). Aspects that typically require close monitoring include time schedules, job sequencing, costs (if the contract is not fixed price), extras, and construction quality. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.8.

If extras cannot be easily passed on to the end buyers, most of the interviewees attempt to minimize the total dollar cost of extras. Some of the specific comments offered by the interviewees are given in Panel B of Exhibit 5.8.

5.1.10 Subcontractors

Most of the builders and developers subcontract between 75 and 90 percent of total construction costs to the subtrades. This is generally done on a fixed-price basis.

Exhibit 5.8

Specific Comments of the Interviewed Builders and Developers on Site Control

Panel A: General

"If you want to know what is happening, you have to be on the site. I use informal schedules and my daytimer as a recorder and scheduler."

"We check work on a daily basis. Our strength is cost control which is achieved by close monitoring. Our foreman reports in daily."

"We exercise tight control at the site. We deal with time and personnel problems on the site. We attempt to minimize extras. We use formal controls for costs and cash flows. You need a certain size to have good controls."

"We are active construction managers. We have an engineer and foreman on the site. We do not subcontract the management of a site to a general contractor. We manage quality and building according to the specs and time."

"Our project execution is actively managed. We have a project manager on site and we hold weekly meetings to discuss projects. Since there are so many interfaces, coordination of the subs for construction is difficult, especially when extras occur. On a monthly basis, we compare actual and budgeted costs. We do not monitor cash flows because each project has its own financing."

"We have supers and project managers on site. I am also close to most of the jobs myself. I like to have control. We have a project budget which we try to attain. Staying within the budget depends on so many factors."

Panel B: Extras

"We have not concerned ourselves overly with extras. With our condos, we just pass these costs on to the buyer."

"We do not have much extras. We ask the subs for propositions and a turnkey price. We give the subs a general idea of what we want."

"We have our own estimators to control extras."

"A sub can get 50 to 75 percent of its revenues from modifications to the original contract. We try to minimize extras and their impact in a number of ways. First, we account for modifications from the beginning. Second, we try to modify as little as possible. Third, we check estimated costs for modifications with the subcontractor. A contractor tries to get you on time delay. When

Exhibit 5.8 (cont'd)

you sell to a buyer, you have to deliver. The subcontractor knows this so he states that certain changes have to be made before he can proceed to finish the work he has contracted to do."

5.1.10.1 Choice of Subtrade

The first preference of all the interviewees is to work with subs with which they have a long-term relationship. To keep these subs "honest" in terms of pricing, the interviewees solicit bids from at least three subtrades periodically for small dollar-valued subcontracts and nearly always for large dollar-valued subcontracts. The choice of sub is usually based on price, and to a lesser extent on price flexibility, timing, quality, terms of payment and the perceived financial stability of the sub. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.9.

5.1.10.2 Contractual Arrangements

Most contracts with the subtrades are for a fixed sum based on drawings and specifications. Modifications and extras are usually priced on a unit basis. While the builder or developer attempts to maintain the fixed price by minimizing extras, the sub attempts to move towards a variable price by maximizing extras. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.9.

5.1.10.3 Control

Builders and developers use various monitoring devices to control their subtrades. These include penalty clauses, hold backs, weekly meetings, written warnings if there are delays, and nonpayment for nonperformance. Most of the interviewees felt that withholding payment was a poor method of signalling dissatisfaction to a subcontractor. Some of the specific comments offered by the interviewees are given in Panel C of Exhibit 5.9

5.1.10.4 Failure

The interviewees attempt to avoid subtrades who are not financially solvent because they bear additional costs in the event that a sub fails.

Exhibit 5.9

Specific Comments of the Interviewed Builders and Developers on Subcontractors

Panel A: Choice of Subtrades

"We have a lot of subs which we like to work with. For big projects, or to check pricing from time-to-time, we solicit bids."

"It is hard to find the right subs. It takes time to build the required trust between the two parties."

"We only deal with those with which we have developed a long-term relationship on a fixed-price contractual basis."

"To identify subs, we get references from other developers. We determine what they are offering in terms of timing and price, and what their requirements are. This is in terms of up-front cash and price."

"There are some subs we like to work with who are flexible in terms of price. We use different subs for custom homes and condos. Subs differ by market segments. One group exists for residential, another for highrises."

"We solicit a minimum of three to five fixed-price bids. We hold back 20 to 25 percent. We require a bond for a large subcontract, and are happy to pay for it ourselves."

"For private, we use some subs for which we get good prices. We call for tenders to check prices. We get lots of submissions."

Panel B: Contractual Arrangements

"We contract at lump sum based on drawings and specs. We use unit prices to price modifications and extras."

"A developer tries to keep to fixed price. A contractor tries to move towards variable price."

"Our contracts are at a fixed price. The sub must respect the furnished schedule."

"All our subs are at fixed price with no extras or deficiencies. We require no bonds from the subs."

"All our subcontracts are fixed price with no extras. One-half of our trades give a waiver of lien. We require that it be witnessed."

Exhibit 5.9 (cont'd)

Panel C: Control

"We maintain tight control over the subs. I do not pay the subs if they do not perform. We send letters to the subs every so often about their performance. We have no problems with subs asking for too fast payout."

"We do not slow down payments to the subs and suppliers if we have a cash flow problem. They might decide to slow down on the job site."

"If we have trouble with a sub, we contractually have the right to put them on 48 hour notice. The hold back is another control device. The work in place warrants a payment of x less the hold back. In case of dispute, the architect becomes the arbitrator."

"Due to the penalty clauses in our contracts, delays result in a cost to the subcontractor. We have weekly meetings with the subs, and we issue written warnings if there are delays. We can deduct from the payment certification if there is a delay. We check if the work estimates given by the sub are inflated. Subs are hard to work with. If you squeeze them too hard, you will pay for it in terms of quality. We don't try to get one penny more from the subs."

"We use payments to signal dissatisfaction to the subcontractors and other such parties."

Panel D: Failure

"We check the financial stability of our subs. We try to protect ourselves through our payments and by avoiding weak subs. Although we take no direct financial risk because of the sub, a sub's bankruptcy delays and increases its cost."

"We had an experience with a subtrade who was experiencing financial difficulties. We convinced the client to pay for material directly so that the sub could complete the job."

"You can not replace some subs. For example, if the subcontract is electrical, you can not afford to take on another sub because he will replace everything. Before you take on another sub, you have to first pay the first. Then you can go to court with the first sub. If the first sub is bankrupt, then you have a really big problem."

Exhibit 5.9 (cont'd)

Panel E: Bonding

"We usually do not ask the subs to put up bonds. Such requests are a two-way street. The sub may turn around and ask for a payment guarantee which costs us money."

"Our subs provide bonds for big jobs (those which exceed 300 thousand dollars). Bond rates differ by company."

"With the public tender process, you can get a sub you never worked with. The sub may not be liquid. We got caught a few times when a sub went broke. One was an electrician. The bonding company funded the completion of the job. The bonding company spent all their bond money on the job." [nonresidential division of a large developer].

Panel F: Jobbers

"Jobbers are not a problem. Every sub is doing some of that to be competitive."

"The small guys with jobbers keep us bigger guys in check. While they beat you in efficiency and cost, they have no reputation and lower quality. Their end product appeals to certain segments of the market."

"We only use unlicensed workers without permits. They are usually hard working immigrants in the specialized trades. We pay cash at one-half the union rates."

"We had problems with a demolishing company who was using workers with no licenses. Every time the OLQ inspectors came, these workers were in a mad scramble to leave the demolition site."

Generally, the replacement sub will have to be paid more than the original sub would have been paid under the original subcontract. In the case of an electrical subcontract, the replacement sub will only guarantee the job if all the wiring put in by the original sub is replaced. Thus, many of the interviewed entities will attempt to "muddle" through the project completion with a sub who is in financial difficulty. Some specific comments offered by the interviewees are given in Panel D of Exhibit 5.9.

Most of the interviewees perceive bonding as a costly means of protecting against the failure of a subcontractor. Most of the interviewees only require bonding if the sub is new and/or the dollar value of the subcontract is relatively high. Some specific comments offered by the interviewees are given in Panel E of Exhibit 5.9.

5.1.10.5 Deficiencies

Although most of the interviewees find it difficult to control subcontractor quality on the job site, most of the interviewees only experience minor difficulties with the rectification of deficiencies. One such difficulty are delays when the construction market is very busy. This was stated by one interviewee as follows:

"Although we have quality control, it is tough to control quality on site. Subtrades are into production and not cost or quality control. Unlike the older workers, the younger workers are into production. Quality control is a function of resources spent, and most of us are not willing or cannot spend too much on overhead. Hold-backs are sufficient to get rectification of deficiencies."

To protect against deficiencies whose responsibility is contentious, some of the interviewees carry umbrella insurance. This was aptly stated by one interviewee as follows:

"Every sub takes its own insurance. We take umbrella insurance in the case the fault needs to be assessed between subs. This is done by holding an inquiry to see who is at fault."

5.1.10.6 Jobbers

Most of the interviewees felt that the use of jobbers (i.e., unlicensed trades people) by the subtrades was necessary to moderate rising housing construction costs. Some specific comments offered by the interviewees are given in Panel F of Exhibit 5.9.

5.1.11 Financing

The interviewees described the financing of a typical residential project by a typical developer or builder as follows:

"A typical developer buys land with 100 percent equity. He then inflates the land prices because a bank is only willing to provide 70 percent financing. A typical developer then runs into a cash flow problem because he has no cash reserve."

"A builder ties up most of his working capital in model homes and land purchase. He then obtains bridge or interim financing equal to 75 percent of the selling price of each house being purchased by a client."

Most of the larger-sized interviewed entities have little difficulty procuring funds. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.10.

Some of the interviewees successfully minimize their equity investment in raw land by using balances of sales and other such financing vehicles. Most of the interviewees attempt to use land as their equity contribution to obtain maximum debt financing for project construction. Such loans are generally in the form of interim or bridge construction loans on a project-by-project basis. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.10. None of the interviewees used interest-rate hedging. However, as aptly stated by one interviewee:

"We hedge against increasing interest rates by increasing the selling price. We lay off increased costs to the buyer."

Exhibit 5.10

Specific Comments of the Interviewed Builders and Developers on Financing

Panel A: Difficulty in Procuring Funds

"We have no problem getting funds. We receive two or three offers every day."

"We have no problem raising funds. Our problem is to get good prospects. All our financing is on a project-by-project basis."

"Our problem is to find the deal and not the funding."

"There is lots of money available but a lack of good projects."

Panel B: Equity Minimization

"By deferring the deed signing, we paid interest on the land only."

"We make a minimum down payment of ten percent to obtain control of the land. The remaining payments are on a pro rata basis as homes are constructed and sold. Construction is financed with bridge financing. With 75 percent financing, we can not engage in any speculative building. We also need 25 percent for working capital."

"Our only equity is usually land."

"Our main financing vehicle is the use of a balance of sale, which carry a seven to ten percent interest rate. We make a conditional offer subject to a 30-day inspection period. We always try to flip the property within the 30-day period to a stable of investors such as doctors, lawyers, etc. For one property, we took bogus leases so that we could arrange financing. The property had potential when we bought it, and it turned out to be highly profitable."

Panel C: Residential Interim or Bridge Financing

"For residential interim, a banker requires: equity; a track record (which is equally important and is basically whether or not you can execute, especially under adverse conditions); reporting of work in progress; and the project as collateral by the use of a first mortgage of land and a transfer of the trust deed. Generally, I have to sign personally to secure the loan."

"Financing depends upon background, credibility and trust between the parties. We pre-sell 75 percent to facilitate financing by reducing risk."

Exhibit 5.10 (cont'd)

"A banker wants hard-asset collateral such as land and buildings. He wants financial statements such as the income statement and the balance sheet."

"Banks look at a client's net worth, and they require a personal, corporate and property guarantee and personal financial information."

"If there is trust between the banker and yourself, you generally have to pre-sell 50 percent of the condos. If you have to pre-sell 75 percent, then it is hardly worth borrowing funds."

"We refuse to put up anything other than the project as a guarantee. Our financing is strictly on a project-by-project basis. The only negotiable item is the procedure for foreclosure."

"Monitoring depends on the bank you use."

"I give my banker audited financial statements. Most of my competitors give financial statements with accounting comments."

"We give the bank rough drawings, pro formas, timetables and fund schedules. We have no fixed disbursement schedule to give us greater flexibility. We borrow at prime plus one-quarter to three-quarters percent. The bank uses our architect."

"I do all the negotiations with the banks for construction loans. We supply the bank with pro formas, budgets and budget costs."

Panel D: Traditional Lenders

"Although the schedule B banks will bear higher risk, I like to stay with my traditional banker."

"I have tried a new bank but I prefer to deal with my traditional schedule A bank because we have a good relationship. Sometimes we see things totally different. Banks need to finance people, and make rules easier for older clients."

"We do not use the same bank. We shop around for the best deal."

"We deal with two or three banks. I do not believe in dealing with only one bank. I have a good relationship with [insurance company]."

Panel E: Other Lenders

"We obtained our first funding from a schedule A bank. They did not require personal guarantees. The schedule B banks have helped by generating a more competitive environment."

Exhibit 5.10 (cont'd)

"We are not financed by the big six banks who require too much information. They require market studies, financial feasibility, critical path, schedule of disbursements and a penalty or premium on unused disbursements. We pay prime plus one and one half percent for our funds."

"We have dealt with schedule A banks so far. We get good rates and low fees."

Panel F: Other External Sources of Funds

"We set up separate firms to buy and finance the land purchases. We use private investors, both domestic and foreign, for this purpose. Such financings take up a lot of my time. I meet with my financial bankers three and one-half days per week."

"Large developers are more sophisticated than small developers in terms of financing. They use pension funds and joint venture structures."

"To finance the units, we offer private investors a high return equal to the bank rate plus a 50 percent mark-up."

"We also have institutional participation in a phased project which involves interest capitalization. Institutions can provide fixed-rate, long-term funding because they can hedge interest-rate risk." [large developer].

"Our outside condo investors are informed every three months. We give them an updated budget, list of apartments sold, and any major events that occurred."

"We use outside investors from [continent]."

5.1.11.1 Bank Financing

To obtain residential interim or bridge financing from a bank, a builder or developer must satisfy the lender in terms of its: track (execution) record; equity involvement; personal, corporate and/or property collateral/guarantee; and must commit to report periodically as work progresses. Typically, a builder or developer must initially supply personal and corporate financial statements, and both the corporation and its principals must assume joint and several liability for debt repayment and servicing. Some specific comments offered by the interviewees are given in Panel C of Exhibit 5.10. Bank financings are disbursed as the projects achieve specific progress milestones. Some specific comments offered by one interviewee include:

"No money is available from a bank until the foundations are up. This can cause a cash flow problem in residential."

The commitment fee paid by a builder or developer can be a percentage of the total commitment or on only that portion which is drawn down. Some specific comments offered by one interviewee on commitment fees are:

"Our loans from the bank are scheduled as needed. We only pay a commitment fee of prime plus one-half percent on what we take down. If a developer commits to a firm draw down schedule, then he has a problem because he needs to pay for funds even when he does not require such funds. There are additional costs if the bank has its own architect to do inspections. In our case, the bank usually relies on our architect for such inspections."

The majority of the interviewees prefer to deal with their traditional lender. Some specific comments offered by the interviewees are given in Panel D of Exhibit 5.10. Most of the interviewees perceived lenders other than the large six schedule A banks as being willing to bear greater risks. Some specific comments offered by the interviewees are given in Panel E of Exhibit 5.10.

5.1.11.2 Other External Sources of Funds

Surprisingly, many of the interviewees do not use other external sources of funds, such as equity investors, syndications, insurance companies or pensions funds. Some specific comments offered by those who do not use external sources of funds include:

"If you go the syndicate route, you do not deal with professionals. This results in decision-making problems. Your outside investors may be on an ego trip."

"We have not used pension funds and insurance companies for funds. With a ten percent ownership, they want a say. These silent partners quickly become talking partners."

Some specific comments by those interviewees that have utilized other external sources of funds are given in Panel F of Exhibit 5.10.

5.1.12 Marketing

Interestingly, both the importance of marketing and the need to actively manage the marketing function increase as the size of the builder or developer increases. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.11.

5.1.13 Management

Generally, most of the interviewed entities have a management which appears to be competent but overworked and overextended. In addition, no apparent successor appears to exist in the event of death for a number of the interviewees. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.11.

5.1.14 Manpower

Most of the interviewees have a lean staff. They tend to trim staff according to construction volume, and only retain valued employees during

Exhibit 5.11

**Specific Comments of the Interviewed Builders and Developers
on Marketing, Management and Manpower**

Panel A: Marketing

"A good building will sell itself." [small builder].

"We get sales by word of mouth." [small builder].

"Pick an agent who sells only for you. His incentive is commission. Remember that the product is more important than the agent. By looking at other projects as a potential buyer, my architect and I determine our strategy."

"I use to think that promotion was not important. I thought that customers could correctly assess quality. Marketing is our weak point. We need an active marketing strategy. We need to develop our own marketing strategy."

"Although we have a person in charge of advertising in-house, marketing is one of our weaker aspects."

"We have salespeople and use agents. Anyone who helps in a sale is paid a fee."

"We have a special agreement with a real estate agent. Actually, it is a partnership agreement whereby the agent gets a share of the profit."

"Marketing is very important. We have four people in marketing. We have bi-weekly meetings over lunch. I talk to the marketing people every day." [large developer].

"Since construction is a function of product, marketing is a key factor which comes into play. A typical developer has no clue about financing or marketing." [large developer].

Panel B: Management

"We have eight people in the firm. This means that we are all overworked but we can make quick decisions."

"I look after the job site. My partner does the administration. We have little time for marketing."

"Until 1980, I operated as a one-man operation. Although my overhead was low, I could hardly cope."

Exhibit 5.11 (cont'd)

Panel C: Manpower

"We have a lean crew of four supers, four or five carpenters who do odds and ends, and eight or nine general helpers for clean up, etc."

"I have a lean staff of workers who only do foundations and some finishing. If the market is bad, I do not keep some or all of my crew. If I expect a better situation in the short run, I may keep my crew."

"It is hard to get good people so I keep the better ones even if business is bad. We pay inside people big bucks, including bonuses. I do not give them part of the action. Sometimes they leave to go on their own. Some of them find that being on their own is not easy."

periods of insufficient construction volume. Some specific comments offered by the interviewees are given in Panel C of Exhibit 5.11.

5.1.15 Scale of Operations

The interviewees felt that there were soft (and not hard) constraints on their scale of operations. They felt that these soft limits were based on their current capabilities to manage various projects and the complexity of each project. They felt that beyond this soft constraint, they would lose control and impinge on project execution. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.12.

5.1.16 Cost Control

Most of the interviewed entities attend to cost control by using various types of in-house job cost control systems. Many of the interviewed entities have just implemented or are currently implementing a job cost control system on a microcomputer. These systems generally involve a comparison of budgetary variances to identify deviations from expected cost expenditures. Few of the interviewees actually do a detailed post audit of budgetary variances for completed projects. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.12.

5.1.17 Final Product Extras and Deficiencies

Most of the interviewees price extras desired by a buyer at cost plus a mark-up. Some interviewees include a margin in the final price to cover some "free" extras for the buyer. Specific comments offered by the interviewees on extras include:

"We do not like extras. We try to avoid them."

"We use unit prices to price client changes or extras. We build in some margin to cover extras."

Exhibit 5.12

Specific Comments of the Interviewed Builders and Developers on Scale of Operations, Cost Control and Final Product Deficiencies

Panel A: Scale of Operations

"We have a size limit based on the limits to my own capabilities."

"We have no threshold limit. At some point, which depends on the number of sites we are engaged in, we feel that we are losing control."

"We have a lower limit on development size and no upper limit."
[large developer].

"We could grow to any size. I would have to delegate. I am not afraid to lose control by delegating."

"Most builders grow to a certain size and become comfortable at that size. Beyond that, they do not want to grow."

Panel B: Cost Control

"I sign the cheques and check the nonpayroll expenditures, which reveal information about how costs are being controlled. I review the cash budget weekly, and we do a variance analysis."

"We manage construction actively. Our computerized system provides monthly budgets and budget variances."

"We prepare a monthly accounting statement. We have an in-house costing system which uses information from the field on a weekly basis. Our computerized system is still not operational. I examine bills daily because we are very cost conscious. Since an inflated cost of administration can be deadly, we try to keep it down."

"We are computerized, and we have a lean, well-organized management group which closely monitors cost."

"We have a computerized job cost system for which invoices are inputted daily. We calculate variances daily. We provide a budget for the project manager before he negotiates with the sub. We lease all our equipment."

"We now have a job cost control system that compares actual versus budget. We do this every 15 days."

Exhibit 5.12 (cont'd)

Panel C: Final Product Deficiencies

"Deficiencies are not a problem. We have a cushion built in for changes. In the case of debate, whether or not I settle out of court depends upon the individual I am dealing with and my own belief. If the customer is just hard to deal with, I may decide not to satisfy the client and let the case go to court."

"There is a tolerance in anything we do. There is a two-way relationship between ourselves and our clients. If the deal is not reasonable, there is a lot we can do to hassle the client."

"We often throw in extras to gain some goodwill with the buyer."

Most of the interviewees do not perceive deficiencies as being a problem. The reasons are three-fold: first, most builders and developers add in a contingency loading to the final selling price to cover expected deficiencies; second, there is a certain legal tolerance allowed for deficiencies of actual construction from original construction specifications; and third, if the client is too demanding, the builder or developer can retaliate by hassling the client. Some specific comments offered by the interviewees are given in Panel C of Exhibit 5.12.

5.1.18 Success and Failure Factors

Some of the factors necessary to be successful as a builder or developer, which were identified by the interviewees, are given in Panel A of Exhibit 5.13. Some of the factors that lead to failure as a builder or developer, which were identified by the interviewees, are given in Panel B of Exhibit 5.13.

5.2 General Contractors (GCs)

5.2.1 Nature of the Business

Most of the interviewed GCs perceive their industry as being cyclical (peaking before both the summer holidays and the year-end shutdown of the industry), fairly easy if costs are professionally managed, and competitive. Most of the interviewed GCs perceive their industry as becoming more professional due to the entrance of an ever increasing proportion of professional engineers into the industry. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.14. Most of the interviewed GCs believe that being a general contractor involves lower risk

Exhibit 5.13

Specific Comments of the Interviewed Builders and Developers on Success and Failure Factors

Panel A: Success Factors

"Success depends upon avoiding uncontrollable risks. Timing is important. Have to assess your downside exposure. Cost control is important for operations. How you make the deal and marketing are important. What you are selling is professionalism, confidence and competence. Every aspect of the package is important."

"Success depends upon hard work and the mood of the market. Tight control is the way to succeed."

"Success depends upon drive, how you move from site to site, and how you work with the subs. You need to keep the debt load low, and have a good line of credit. You do not have to monitor cash flows closely."

"Success depends upon a good budget, and having lots of luck and guts. Cost control is important. You can do it manually if you are small."

"To be successful, you need to work fast and the leanest. You have to do the work with specialized subtrades. You have to package specialists (the subtrades) for each project."

"Being successful is a very difficult play. You must give the client more than your competition. You must have better quality, price and so on."

"Success depends upon being well capitalized and patient. Everyone wants to be in this business."

"To be successful, your background and education are important. You have to know the right people."

"A contingency fund is required. The secret to success is to weather out the bad periods."

"Experience is important for success. Your word has to be gold. There has to be no doubt about your credibility."

Panel B: Failure Factors

"Failure is due to a quick buck mentality, the cyclical nature of the business, insufficient financing, and spending the profits during good times too quickly."

"Undercapitalization which can not handle a slight downturn. This is a business you can run from a station wagon. Speculative

Exhibit 5.13 (cont'd)

building can lead to failure. Ease of entry. To get a builder's license, you only need five thousand dollars of equity and write exams to satisfy the experience requirements."

"Failure is due to the risky nature of the business. For example, general factors such as high interest rates can lead to failure. Getting outside of your league can lead to failure."

"Firms fail because they are on a tight budget. They can not handle unforeseen circumstances."

"Failure is due to undercapitalization and no holding power. There are more valleys than peaks in the business. Developers feel these cycles more."

"Failure occurs because they do not negotiate adequate financing for low periods. The problem is negotiation for financing. To avoid failure, do not start off undercapitalized."

"There are two reasons for failure; poor costing and fraud. Also, you can have problems with customers. The costs have to be right."

"Failure is due to a lack of cash flows. Developers are wrong when they say that cash flows are not important. A lack of cash flows is like high blood pressure. It is a silent killer."

"Signs of possible failure are the failure not to pay bills quickly, interest rates and market conditions."

Exhibit 5.14

**Specific Comments of the Interviewed General Contractors
on the Nature of the Business of Being a General Contractor**

Panel A: General

"It is easy to do general contracting if you can manage costs. It is hard to become big because most of the money comes from yourself [i.e. self-financing nature of the industry]."

"There are problems with constructing such as too many subtrades. If one [general contractor] does badly, it ruins everything ... There is a new breed of people in construction. There are more engineers as partners and owners, and more are being hired to run jobs. Firms are becoming more technical and are using more computers."

"The field is becoming more professional. Even the supers are. A super who is a carpenter can not see co-ordination aspects. The market has a three or four year cycle."

"Our cycle is as follows: winter down, summer up, with peaks at [both] holidays."

"There are two peaks in the year. Biggest is in fall from September to December. Smaller peak before summer vacation."

Panel B: Risk and Return

"There is a low profit margin, and, of course, low risk."

"Our returns average three to five percent on sales. These profit margins are seasonal."

"We are satisfied with our bottom line of five to ten percent before taxes."

"We have net profits of three to four percent on a sales volume of five to ten million dollars. We get better margins on our smaller projects with less risk and less competition."

"Our profit margin on a large project is five or six percent. However, it is easy to pass from this low profit margin to nothing."

"Our markups are five to six percent, including turnkey projects, which have a five percent contingency."

Exhibit 5.14 (cont'd)

"The industry is very competitive. Our profit margins are squeezed, especially, when we receive a fee for project management. The profits now go to the specialty trades and not the general contractor."

"We prefer fixed price contracts to construction management. We get a fifteen percent profit margin for the former versus four to five percent (two percent profit) for the latter."

"Our markup depends upon the period of the year, job volume, etc. We use three percent on a volume of seven million dollars."

"In a lump-sum markup, we add in a risk loading. On average, we make more money on lump sum. On a cost-plus basis, there is hardly any risk. Our markup is seven to twelve percent, and it becomes smaller with larger contract size."

and lower returns than being a builder or developer. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.14.

5.2.2 Perceptions

5.2.2.1 Perceptions of Residential Construction

Most of the interviewed GCs perceive residential construction as being more difficult and more of a hassle than either commercial or industrial construction. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.15.

5.2.2.2 Perceptions of Renovations

Most of the interviewed GCs agree that renovations can be risky due to the possibility of major surprises. However, the interviewed GCs are divided on whether or not renovations are an attractive line of business based on risk-adjusted returns. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.15.

5.2.3 Assessment of Individual Projects

Most of the interviewed GCs feel that no formal or systematic analytical framework is required to assess the feasibility of individual projects. Since their expected time horizon is short, they feel that accurate estimates are required for only construction costs and the likelihood they will be paid according to schedule. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.16.

5.2.4 Estimation of Costs

According to the interviewed GCs, the estimation of costs is crucial to bid preparation, and to the profitable execution of winning bids. Most interviewed GCs feel that such costs are best estimated manually using their

Exhibit 5.15

Specific Comments of the Interviewed General Contractors on their Perceptions of Residential Construction and of Renovations

Panel A: Perceptions of Residential Construction

"Building residential is the toughest. It is the best training ground. It is more risky with more arguments, more scheduling difficulties and less profits. There is also a problem with a lot of subs working in a small area."

"Residential is quite a lot of hassle. Problems include collecting money, competition, and smaller builders using jobbers (unlicensed tradespeople)."

"We won a public contract in [city] for 48 condos. It was a hassle. We had to deal with 48 picky owners."

"We perceive residential as being a little more frustrating, but not so much of a problem."

"We are not involved in residential where the subtrades are different. You have to work from no or poor specs. You can only contact subs at night."

"We are not in residential development because one needs a lot of investment. Also, the market is not one you can control. Prospects vary a lot. For example, in 1987 and 1988, prices dropped by 32 and 38 percent, respectively, in Laval. We feel that if you are in residential, you have to do only that."

Panel B: Perceptions of Renovations

Renovations are very risky. There is a problem with extras along the way or after the basic contract is completed. Renovations are the hardest to execute and are the riskiest for the general contractor. Their potential reward-to-risk is poor. We do renovations to fill in when the market conditions are bad."

"With renovations, it is difficult to estimate costs. There are always a lot of possible surprises."

"Renovations are difficult due to site tightness. Also, little things add up."

"Renovations are more profitable and more risky due to unforeseen risks."

Exhibit 5.16

Specific Comments of the Interviewed General Contractors on the Assessment of Individual Projects and the Estimation of Costs

Panel A: Assessment of Individual Projects

"I assess the client's financing and our past experience with the client. We study the project's viability. Will the project sell? You almost need a lawyer on staff since many clients want to shaft us contractors."

"We only do cost estimates and cost schedules. We have no need for cash flow schedules. The reason is simple -- we only pay if we get paid. We have a ten percent holdback on all payments to our subs."

"We do no assessment of project viability. We work according to the specs and drawings."

"As a general contractor, we do not use market studies or assessments of financial feasibility. We just work from plans."

"We work from rough budget estimates which have to be adjusted. We factor in the time over which the project must be executed."

"We do assessment of vacancy rates and demand ourselves. We only work in areas we know or our associates know. Outside studies indicate if the project is feasible and its needs for financing. We may do a credit check of the client."

Panel B: Estimation of Costs

"Although we estimate according to plans and specs, estimating is tricky."

"I have a cost base in my head, and I always use a rule-of-thumb to double check all our estimates. A computerized information system would be nice."

"We have had a program for the past four months which keeps track of past unit prices and generates zero-base estimates. At the end of a project, we compare actual costs against our own standard unit prices to assess our estimation accuracy."

"Since estimating is important, we do it in-house and we do not trust the available computer estimating programs. We do detailed estimates. We are, however, building a cost data base."

"It is hard to get good software for cost estimates. We have been looking for three years. It is easy to get software for the piping trade. All you need is a large data bank and some fine tuning for

Exhibit 5.16 (cont'd)

union regulations, conditions and so on. Cost estimation for high-rise buildings is similar since you can take off from the estimates for the first floor."

own experience and expertise. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.16. According to the interviewed GCs, subtrade costs increase as the volume of work booked by the subtrades increases. Some specific comments offered by the interviewees include:

"Our installation costs vary according to the construction cycle and the amount of work the subs have. We find that it is important to book early to minimize our costs."

"Subtrade cost estimates increase when they are busy. They tend to make the money, not us."

5.2.5 Risk and Risk Management

The interviewed GCs identified two types of risks; namely, technical risks that impede project execution or increase its costs, and payment risk. Some specific comments offered by the interviewees include:

"Unlike civil work, there is little risk since building is straightforward. We have a technical risk evaluation sheet which we use."

"Our risks are whether or not we will have problems while doing the job. This depends upon the quality of drawings, penalty clauses, and our relationship with the client and his architect. Risk is anything that was unforeseen when we bid for the project."

The pure general contractors (that is, those that do not also operate as a developer or builder) seem to use fewer techniques for risk management. They generally estimate costs conservatively, and have a conservative capital structure.

5.2.6 Bidding or Negotiating for a Contract

While some of the interviewed GCs typically bid for project contracts uninvited, others typically bid only after being invited to do so. The markup in the bid depends upon a number of factors such as the period of the year, job volume, the consultant(s) involved in the project, the cost estimate to

complete the project, and the effect on the general contractor's cash flows. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.17.

5.2.7 Job Site Control

As was the case for the interviewed B&Ds, the interviewed GCs actively manage their job sites, and their success depends upon the nature and quality of their monitoring techniques. However, the pure GCs seem to use less qualified personnel to monitor their job sites. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.17.

5.2.8 Subcontractors

Most of the general contractors subcontract at least 70 percent of total construction volume to the subtrades. This is generally done through a written contract with the subtrade or a purchase order on a fixed-price basis. Generally, the general contractor's staff works on general conditions, and rough and finishing work. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.18.

5.2.8.1 Choice of Subtrades

The first preference of all the interviewed GCs is to work with subs which they have a long-term relationship or referral. To keep these subs "honest" in terms of pricing, the interviewed GCs solicit bids from at least three subtrades periodically for small dollar-valued subcontracts and nearly always for large dollar-valued subcontracts. Generally, only one or two subs reply with a bid. The choice of sub is usually based on price, and to a lesser extent on price flexibility, timing, quality, service, terms of payment and the perceived financial stability of the sub. If the submitted price is unusually low, the general contractors will contact the sub to

Exhibit 5.17

Specific Comments of the Interviewed General Contractors on Bidding or Negotiating for a Contract and Job Site Control

Panel A: Bidding or Negotiating for a Contract

"We only bid if invited. Thus, we have to work on a client for up to two years before we receive an invitation. Clients are fussy and price conscious. They go for the lowest cost. The result is many extras and alterations. Our markup depends upon the period of the year, job volume, etc. It also depends upon the consultants involved, our cost estimates, and the impact on our own cash flows. We are careful with large projects (projects which represent at least 25 percent of our yearly volume)."

"Recently, more contractors are bidding. The result is that the market is more competitive."

"If we do not have the volume to keep valued employees, we may take a job at cost."

"All contractors quote on the same basis. Thus, the person who is hungriest gets the job in our very competitive market. Everything that is not in the specs is extra."

Panel B: Job Site Control

"We talk to the project managers and supers on a daily basis. The project managers run the daily operations. We get daily logs from the supers. This protects against deficiency claims. We measure progress visually and by invoices. We find that skill is required in negotiating with the major subs."

"We have a good system on site. We go in with a budget, and compare actuals with budgeted values. Our job reports are weekly depending on the size of the project and how busy our people are."

We examine time and cost variances, generally on a weekly basis. The actual frequency depends on our risk exposure and our experience with this type of job. We use micros and have a database. Our jobs are not big enough to implement sophisticated job site techniques, except, perhaps for CPM techniques. I used many other techniques when I worked for [large consulting engineering firm]."

"Our super is generally a carpenter who looks after the job. Our general super goes from job to job. He makes appointments, orders supplies, and slugs the subs."

Exhibit 5.17 (cont'd)

"To be the lowest bidder on small projects, we do not use supers on the site. As a result, our site usually lasts longer. To have a super, we need a project value of over 600 thousand dollars. If we are busy, we may use a working foreman for larger projects."

Exhibit 5.18

Specific Comments of the Interviewed General Contractors on Subcontractors

Panel A: General

"We subcontract 70 percent. Our staff does general conditions, demolition and excavation."

"About 70 percent of our work is subcontracted. We have carpenters and laborers who do rough and finishing work. We do all our own woodwork."

"We do special things in house. We keep a minimum of supers on a permanent basis, and a small labour group. We hire additional supers as required."

"For 80 percent of our work, we use subtrades. These subs are specialized into commercial, industrial and residential."

Panel B: Choice of Subtrades

"We judge a sub based on past performance in terms of quality of work and service. The price has to be good but not the lowest price due to our small margin. We first look at price. Suppose we have four bids for an item. We will go to a bidder if one has submitted an unusually low price to make sure he has not forgotten anything. We will also assure ourselves by evaluating the cost of completing this portion of our job."

"We have a list of good and bad subs depending on the type of contract. We generally ask for three prices, and our choice is normally made based on price. Rest of the time it is based on various conditions such as speed and quality."

"We have lots of contacts and know a lot of subs. We get three subs for every trade. We ask for references. We find that it is better to give a contract to a sub than to do it yourself."

"We feel out the subs before putting in a final bid. We are not bound to any subtrade. We try new subs on smaller jobs first. We get two prices for each trade. If their prices differ, we check to see if the lower price is in error."

"Subtrades usually take on jobs readily until they have achieved a certain volume, and then they charge progressively higher prices to discourage new business. Smaller subs bid lower because their overhead is lower. Larger guys can provide more service. They have higher volume and greater overhead. Larger subs may charge more but they are better equipped."

Exhibit 5.18 (cont'd)

"When construction is busy, it is hard to get subs. On private projects, we try to invite subs to bid. On public projects, we may have to work with unknown subs."

"Due to the bid deposit system, we sometimes can not pick the sub we want. This system is designed to protect the subs. In fact, we have to use the sub if he is the only bidder."

"With the legal bid bond system for public bids, you can not use the lowest bid for bargaining. If there is only one bid, you can not ask for more bids. The system provides limited information, and no financial or track record information, about bidding subs. It is required for contracts over ten thousand dollars."

Panel C: Control

"We have no problem with the subtrades. They are organized differently by type of construction. You can not deal with residential subs during the day. We make a team with our subs who tend to be the same from job to job. We try to solve problems as they occur. If a sub is behind, we give him 24 hours to correct his work. If he doesn't, we send him a letter."

"We normally produce a schedule at the beginning of the job which is also given to each sub. We have a weekly working schedule. If a sub falls behind, we give the sub a letter of warning which advises the sub to increase manpower. We advise the sub that his manpower is not operating to par, why and what actions we expect. We cover our ... in case of a suit. If the sub does not react, we remove some work. We charge the first sub for any cost overages. We find that residential subs are harder to control, and harder to get a hold off. They are family operations with less tools and less sophistication. We have to be careful what work we give to them."

Panel D: Failure

"We have dealt with subs who had financial problems. The subs in our business are however fairly solvent. They take projects only if they can do them, and are financially and personally ready. They avoid getting jobs by pushing their prices up. We have to know who is solvent. If we don't, we check credit references, especially for the smaller subs. If the contract is big, we will not give the contract to a sub who has solvency problems."

"You have problems with the bankruptcy of subs. On one job, we had two subs who went bankrupt. The new sub always costs more because he always argues that the work has to be redone."

Exhibit 5.18 (cont'd)

"You can not protect against a sub going bankrupt. For smaller subs, you should not overpay. For larger subs, you can ask for bonding."

"We are careful in picking subs because bankruptcy, when a sub was the lowest bidder, can be a real problem. The cost of restarting is expensive. Our best protection is that we are a month behind in making payments to our subs."

"Since competition is tough, we have to take a chance. We may require a bid bond from the sub if the contract value exceeds 200 thousand dollars. In some cases, we are willing to pay for the bond for the subs. In other cases, our bonding company may ask for such bonding."

"We have never asked our subs for bonding. We might ask a new sub if his bid is low and the contract is sizeable."

"We pay four dollars on a thousand for bonds to clients, and our subs would pay five or six dollars per thousand. We rarely ask our subs for bonding because this would price ourselves out of the picture."

Panel E: Deficiencies

"The ten percent hold-back covers deficiencies. Since we can lose our reputation on deficiencies, we push our managers to rectify them even if it costs money. Sometimes, it is hard to get the subs back on site."

"We have a book of deficiencies since the subs don't want to go back to the site to correct them."

"Our hold back is enough. It is hard to get the subs to clean up deficiencies when the market is overheated. We have some problems in that deficiencies can occur over the following year which we guarantee for the client."

determine if the bid was made in error. In some cases, the general contractors may evaluate the costs of doing the sub's portion of the work by evaluating its cost. This is done to ensure that the work could be done at approximately the same cost if the sub has to be replaced for whatever reason. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.18.

5.2.8.2 Control

As was discussed earlier for the B&Ds, the general contractors use various monitoring devices to control their subtrades. Some of the specific comments offered by the interviewees are given in Panel C of Exhibit 5.18.

5.2.8.3 Failure

As was the case for the B&Ds, the general contractors attempt to avoid subtrades who are not financially solvent. The reason is that GCs bear additional costs in the event that a sub fails. Generally, the interviewed GCs do not require that the subs furnish bonds because this would diminish the competitiveness of the GC's bid. Such bonding may be required when the dollar value of a new subtrade's contract is relatively high and the subtrade has submitted an unusually low bid. Some specific comments offered by the interviewees are given in Panel D of Exhibit 5.18.

5.2.8.4 Deficiencies

Although most of the GCs find it difficult to control subcontractor quality on the job site, most of the interviewed GCs only experience minor difficulties with the rectification of deficiencies. Some specific comments offered by the interviewees are given in Panel E of Exhibit 5.18.

5.2.8.5 Third-party Claims

The interviewed GCs felt that they could be assessed with third-party claims for workmen compensation and union dues if their subtrades did not satisfy such obligations. Some comments offered by one interviewee include:

"We are responsible for our subs for workmen compensation. If the subs do not pay dues, the general contractor is responsible even if he has paid the sub. To protect ourselves, we can ask for certification. The same situation exists for OCQ dues even if the sub gives you a certification letter. The employees have one year to make a claim. If the employees make a claim, the OCQ can go to the general contractor for compensation. There is no insurance to protect against this."

5.2.8.6 Jobbers

The interviewed GCs felt that jobbers were used extensively in residential construction, and that their use resulted in unfair competition. Some specific comments offered by the interviewees include:

"There is a problem with scab, nonprofessional labour in residential."

"You have to be bold and confident enough to tell the owner that he is making a mistake using jobbers. I have had a client coming back to me because he has had a bad experience with jobbers. Unlike jobbers, we offer security and confidence."

5.2.9 Financing

Most of the interviewed GCs finance with equity, attempt to match their cash inflows and outflows over the life of their construction projects, and use a line of credit primarily for contingencies. Some comments offered by the interviewees are given in Panel A of Exhibit 5.19. Most of the interviewees have a line of credit with a lender which they perceive as being a cushion for bad periods. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.19.

Exhibit 5.19

Specific Comments of the Interviewed General Contractors on Financing, Bonding and Payment

Panel A: Self-financing

"We self finance and have a line of credit for contingencies. A good amount of our credit line is without a personal guarantee. The reason we do not use more leverage is that it is hard to cover the interest cost of debt from operations."

"A typical project for us of one million dollars lasts four months. Generally, we have a good match between cash inflows and outflows."

"We try to minimize our investment by working on the money of our subs. We never pay our subs unless we are first paid by our client."

"We use our subcontractors to finance projects. On average, we pay them every 40 to 45 days based on the work they have completed less a hold back."

Panel B: Line of Credit

"Our banking relationship is good. We have a 25 million dollar line of credit. We supply job cost and a list of sales and receivables to our banker. We also provide a corporate guarantee." [large developer].

"We have a bank line of credit for which we pay prime plus one and one-half percent. We have to provide collateral and personal guarantees. We are worried about the bank pulling the plug because they sometimes pull it early."

"We have good relations with our banks. We have a line of credit. Our cash flows have been quite stable except for the past year when we have had trouble getting paid for one paving job."

"We give no personal guarantees. To do this, you need to have an account manager you know well. I approached at least 30 banks before I found such a manager. For our line of credit, we pay prime plus one-half percent, and we provide monthly accounts receivables balances and financial statements. Our good track record helped us in arranging the line."

"We stay with the same bank for our credit line. The bank lends us money on our receivables and term deposits. We use a person who shops around for financing and receives a finder's fee."

"It is good to have a line of credit for marketing and safety."

Exhibit 5.19 (cont'd)

"Banks are tough on general contractors, especially on brokers who do not own anything. If a broker goes bust, he has no assets. Since we own a building and do most foundation work ourselves, we can get more from a banker. A developer can get even more because he has land. We use our line of credit for seasonal needs for short periods of time."

"We have to give our lender monthly data on receivables and payables. To originally get our line of credit, we had to give personal guarantees, financial statements, and so forth. We do not like to use our line of credit except as a safety net. We use it for some customers who do not pay well."

"We only use ten to fifteen percent of our good credit line. It provides a cushion for bad times. The banks are a bunch of ... who do not give you anything for nothing."

Panel C: Rent or Lease

"We own small tools and no major equipment. Since major new equipment are expensive to buy and operate, it is cheaper to rent them."

"We have little equipment other than small tools and a pickup truck. We rent most of our equipment."

"We own little equipment other than trucks and light tools." [two responses].

"Although we lease most of our equipment, we would like to buy more."

"Although it is expensive, we lease with a buyback for equipment. We first lease to test if the equipment meets our needs. We own most of our small tools, although we sometimes lease for extra needs. We have a garage and the men to maintain our equipment."

Panel D: Bonding

"Private clients sometimes require bonding. When they are required, they can also provide opportunities. They can eliminate competitors who cannot obtain bonding."

"We have no problems with bonds. We have to provide financial reports for our group of companies."

"Bonds are not a problem if we work with the same client. To get bonding, we need to submit financial statements."

Exhibit 5.19 (cont'd)

"Dealing with a bonding company is tough at first. They examine your track record, and the people who run the company. They require audited financial statements and a personal guarantee. We can go up to twenty million dollars."

"Although we find bonding companies and banks to be similar, the bonding companies are tougher. If there are problems, they have to finish the project on your behalf. They have to pick up any shortfall, and their costs are usually higher. In the past, they took a beating. Now, they try to cover themselves. They are severe in terms of their demands, and you have to prove you can do the job. The rule of thumb on coverage is ten times your working capital adjusted for individual circumstances. If you know your broker, this sometimes helps in getting a larger amount of bonding. We can get four million dollars in bonds at a cost of \$6.50 per one thousand dollars. Private companies generally do not require bonds by assuming the risk themselves."

Panel E: Payment

"Our problem, like most general contractors, is to get paid. We only sign a contract with a penalty clause if there is a corresponding incentive clause. We pass any penalties along to the subs."

"We usually get paid before paying our major subs. This is not the case for our suppliers. One of the keys to our success is to work for good people who pay on time."

To minimize their investment, most of the interviewed GCs lease or rent most of their equipment. Some specific comments offered by the interviewees on lease or rent are given in Panel C of Exhibit 5.19.

5.2.10 Bonding

The interviewed GCs generally do not have to provide bonds for private clients. Some of the smaller GCs find that obtaining bonding is even more difficult than obtaining bank financing. Some specific comments offered by the interviewees are given in Panel D of Exhibit 5.19.

5.2.11 Payment

Many of the interviewed GCs believe that one of their major difficulties is to contract with customers who pay as contracted. Some specific comments offered by the interviewees are given in Panel E of Exhibit 5.19.

5.2.12 Marketing

Most of the interviewed GCs spend little time on marketing, and do not have an organized marketing strategy. Many of the interviewed GCs perceive marketing to be one of their weaknesses. Some specific comments offered by the interviewees are given in Panel A of Exhibit 5.20.

5.2.13 Management

Most of the interviewed GCs have a thin management structure which manages by exception. As aptly stated by one interviewee:

"Job meetings take up a lot of my time. We however manage by exception. We spend a lot of time putting out brush fires."

Exhibit 5.20

**Specific Comments of the Interviewed General Contractors
on Marketing, Cost Control,
and Final Product Extras and Deficiencies**

Panel A: Marketing

"I do not like to hustle. We have good clients but it is hard to get new ones. I would like to spend more time promoting our firm."

"Our total marketing effort is this brochure."

"We get new business by word-of-mouth. We also get new business by setting up related businesses, such as a design company."

Panel B: Cost Control

"We have an inhouse program which calculates budget variances for the 16 divisions of construction. Our previous program also used predicted costs."

"We have our own program for cost control. We enter actual costs and estimates, and calculate variances monthly against actual and projected costs. The previous owner was from the old school. He had no records and produced no reports."

"We use our computer for producing financial statements monthly. We obtain variances monthly for bigger projects. Since we do not do a lot of subcontractors, this is easy to do."

"We have a computer system for cost control which is good for controlling the subtrades. We are still not there in terms of estimating. Since we use square feet to estimate, our estimates are not high quality."

"We use our computer system for accounting, planning and scheduling, and for project management for jobs over one million dollars or jobs that are labour intensive. We enter all the information at the end of each week. This includes the materials budget, men on site, labour, concrete, fill, etc. We use packaging slips to get some of the required information. We do a post audit for new types of projects."

Panel C: Final Product Extras and Deficiencies

"Although extras can be profitable, we do not like them. We can not close other deals because of extras, and we have to work around the extras until client approval is obtained."

Exhibit 5.20 (cont'd)

"We always have extras but they are usually a small percentage. They are a problem with lower-priced homes."

"We inform the owner of the extras. We do not charge for them if the cost is not high. There is a tradeoff between extras and deficiencies. As we say in French, 'one hand washes the other'."

5.2.14 Manpower

Most of the interviewed GCs have a lean staff, which concentrates on basic construction functions and whose size varies directly with construction volume. This was aptly stated by one interviewee as follows:

"We keep a few supers even if we are not busy. We keep them busy fixing tools."

5.2.15 Scale of Operations

As was the case for the B&Ds, the interviewed GCs perceived a soft constraint on their scale of operations. Some specific comments offered by the interviewees include:

"We have an optimal size. We can go up to nine or ten million dollars. Beyond that, we would need more professional help."

"Above a medium-size company, we would lose control."

"It is easier for a general contractor to become a builder because he already has the equipment."

5.2.16 Cost Control

Most of the interviewed GCs attend to cost control by using various types of inhouse job cost control systems. Most of these interviewed entities have just implemented or are currently implementing a job cost system on a microcomputer. Given the tight margins, most of the interviewees consider this aspect of their business to be extremely important. Some specific comments offered by the interviewees are given in Panel B of Exhibit 5.20.

5.2.17 Final Product Extras and Deficiencies

Most of the interviewed GCs encounter extras while completing their contracts. Although they find extras to be profitable, they also find that extras can be a source of contention with the client and extras can impede

the rate of progress on the job site. Some specific comments offered by the interviewees are given in Panel C of Exhibit 5.20.

5.2.18 Success and Failure Factors

Some of the factors necessary to be successful as a general contractor, which were identified by the interviewees, are given in Panel A of Exhibit 5.21. Some of the factors that lead to failure as a GC, which were identified by the interviewees, are given in Panel B of Exhibit 5.21.

5.2.19 Plans for the Future

The primary plans for the future for the interviewed GCs are to diversify into developing and(or) nonrelated lines of business. Some specific comments offered by the interviewees are given in Panel C of Exhibit 5.21.

5.2.20 Continuing Education

Like the builders and developers, the interviewed GCs expressed a demand for continuing education dealing with the management of construction entities and projects. To remain competitive, the interviewees from the smaller and medium-sized entities felt that they had to become more innovative and computerized, and had to enhance their organizational and managerial effectiveness. The interviewees felt that the most effective vehicle for the delivery of such courses would be an intensive, industry-specific program, under the auspices of one of the Associations in the field.

5.3 Lender

5.3.1 Financing Parameters

The interviewed lenders generally do not finance land. According to one of the interviewees:

Exhibit 5.21

Specific Comments of the Interviewed General Contractors on Success and Failure Factors, and Plans for the Future

Panel A: Success Factors

"You need solid clients so that you can get paid. You need to be well organized, know your costs (especially estimating costs), and be able to execute by having the right people."

"To be successful, you need to do a job fast. You need good coordination and a good super who can plan ahead."

"You have to give your customers service and quality. You need quality of management which controls costs without being a scourge. You need to rationalize expenses and personnel, and keep overhead to a minimum. You need to know each job from A to Z so that you can deal effectively with your subs."

"You need very organized office with good control over men, jobs and subs. You must be fast and efficient, and act on deficiencies as soon as possible. You need good people on the site."

"You need to get in and out within the shortest possible time on the job site."

Panel B: Failure Factors

"The failure rate is high because everyone thinks that it is easy. It is tough to control your costs."

"Ease of entry. New guys know the trade but not how to bid or administer. They have no financial background."

"People take chances. They take on lots of business without knowing the owner or worrying about the effect on the bottom line."

"People think it is an easy way to make money. They invest in a business they know nothing about. They become overextended and let their overhead get carried away."

"They think that it is easy to start a company and to make money. During the good years, they let their prosperity go to their head. Some small contractors are not ready for the pressure involved in dealing with their men and negotiating with clients. Some are not prepared to submit a right price because their estimates are poor and sloppy."

"New guys do not understand the financial aspects or control. They underestimate the amount of work required."

Exhibit 5.21 (cont'd)

"Entities fail because they have problems with estimating and cost control."

Panel C: Plans for the Future

"We can go into developing or design and build. We are buying options on lots. Since we are on a learning curve, we only do a development of less than one million dollars. We would like to have a portfolio of holdings to moderate the cycles in our industry."

"We bought some land and would like to move into development and property ownership."

"We are dabbling into stock, electronics, etc. We are doing this all through separate companies."

"We would like to do developing. We would like to diversify into other businesses."

"We are not into land banking. We need specific development plans for short-term development. We are out by the time seventy percent of the project is sold. We are out because we are paid on net selling proceeds; that is, we get paid from the developer's profit on units sold."

The interviewed lenders prefer to finance projects for which all subcontracts are fixed price. They may finance eighty percent of the cost of land, building (on a roll-over basis) and model homes for a builder. To finance the land and the model homes, the interviewed lenders require the transfer of ownership to themselves. To finance building, the interviewed lenders require that the building be pre-sold, and that all customer deposits be treated as trust funds.

5.3.2 Informational Requirements

From all clients, the interviewed lenders strive to obtain financial statements for the involved entities and their principals, project costs and cashflow data. In addition, they require market studies for projects of a certain size (e.g., the construction of 50 homes in a specific area). The lenders acknowledge that lesser demands exist for regular customers, and that the client interview is used to obtain additional information about, for example, the client's administrative ability.

5.3.3 Pre-screen

The interviewed lenders use the condition that "at least 20 percent of the ... are pre-sold" to initially pre-screen funding requests from developers. They may vary the percentage screen if the applicant's track record and reputation are superior, and the applicant is overly liquid.

5.3.4 Assessment

The interviewed lenders assess the viability of a proposed development project to be funded. In the analysis of the site, they assess whether or

not the site is accessible and whether the cost of the project is reasonable. One of the interviewees summarized the lender's perception of market studies as follows:

"We will consider a market study, although we do not believe them. To us, the ability of the developer (track record) is more important."

The interviewed lenders assess the applicant's track record by examining the number and type of projects completed. In general, longer track records are rated more highly. The interviewed lenders assess risk by examining the applicant's track record, net worth and ability to absorb cost overruns.

5.3.5 Collateral

The interviewed lenders require both personal guarantees and tangible security, and the assignment of performance bonds. They felt that other lenders (such as the Schedule B banks) were more risk taking in this area.

5.3.6 Problem Areas

The interviewed lenders noted four major problems with lending to builders and developers. First, a lender must make a decision based on limited or partial information. The lender not only does not have the time to fully investigate the potential file but there is considerable pressure not to assemble the required information. The lender has to balance off the amount of information he can extract from the client with the loss of that client. Second, a lender often must deal with small companies which were set up specifically for the project requiring financing. The lender seldom can examine the total set of interconnected companies. Furthermore, the client's equity investment of ten to fifteen percent may be "rolling from house-to-house". Third, given the second problem, the lender has incomplete knowledge about how the project's risk compares to the developer's total risk. Fourth,

the client will try to get the best deal when times are good. However, when times are bad, the client will "supply the banker with less-and-less information."

6. CONCLUDING REMARKS

Based on the mail questionnaire survey and the in-depth personal interviews, the financial plight and management practices of two samples of building construction participants were studied. This assessment led to a number of major conclusions and recommendations.

6.1 Major Conclusions

The major conclusions are as follows:

C01

While large homebuilders will gain market share over the next decade, small- and medium-sized homebuilders will remain a dominant force in this market by exploiting various niches and their leanness, if they are properly assisted in improving their technical and managerial human capital.

C02

The pace of computerization in the residential construction industry will accelerate. This should lead to more innovation and competition in the industry.

C03

No specific optimal level of operations exists for developers/builders/general contractors. The major effect of exceeding a specific entity's own "optimal" level of operations is a decrease in risk-adjusted performance caused by a loss of control and an increase in personal risk.

C04

The maximum size of operations is subject to a soft constraint, which is based on the current capabilities of the entity to manage various projects and to the complexity of each project. Beyond this soft upper limit, control is lost and project execution is impinged.

C05

The developers and builders do not use a formal or systematic analytical framework to assess the feasibility of individual projects. Since the expected time horizon (reversion point) is short, accurate estimates are typically required for only construction (and soft) costs and selling prices. Thus, only a detailed and careful estimation of costs and an ad hoc market study are typically conducted. Financial evaluators based on discounted cash flows are typically not used.

C06

Given a short expected time horizon for most projects, general contractors typically require accurate estimates for only construction costs and the likelihood of scheduled payments.

C07

Since the quality of cost estimates is crucial to success in the residential construction industry, costs are "systematically and carefully" estimated for new construction projects. However, "true costs" tend to be systematically underestimated.

C08

Project success depends upon the nature and quality of the monitoring of the builder's or developer's agents on the site (i.e., the subtrades). Aspects that typically require close monitoring include time schedules, job sequencing, costs (if the contract is not fixed price), extras, and construction quality. The pure general contractors seem to use less qualified personnel to monitor their job sites.

C09

Greater emphasis is placed on planning for execution than on the financial viability of a project.

C10

Little consistency is exhibited with regard to which indirect costs are included in the cash budgets for projects.

C11

Risk is typically perceived as being solely a "downside" or "loss" notion. The weather, followed by general economic activity and interest rates, are the most important of the macro factors in assessing the total risk of a specific project. The availability and cost of labour, followed by the availability and cost of materials and labour productivity, are the most important of the entity-specific factors in assessing the total risk of a specific project.

C12

Residential construction industry participants use few of the common risk management techniques frequently. The two exceptions are the use of fixed-price subcontracts and equipment rental and leasing.

C13

The frequency at which the productivity (i.e., cost and schedule) of projects is measured during the construction phase varies among the entities in the residential construction industry.

C14

Subcontractor delays, followed by labour availability, are the most difficult aspects to control for in a typical project. The actual rate of on-site construction is most dependent on the availability of labour, followed by the availability of material and the subcontractors' schedules.

C15

Construction industry participants appear to be oriented towards cost control rather than cash or profitability control.

C16

Given tight profit margins, most general contractors consider job cost control to be extremely important to their success.

C17

While many residential construction industry participants develop and maintain a job cost information system for their projects, these systems are generally manual.

C18

The initial (feasibility analysis) and final (marketing and selling) phases are rated as being the least important of the six phases in the eventual success or failure of a project. Most general contractors spend little time on marketing and do not have an organized marketing strategy. Many general contractors perceive marketing to be one of their weaknesses.

C19

Both the perceived importance of marketing and the need to actively manage the marketing function increase as the size of the builder or developer increases.

C20

Management in the residential construction industry tends to be competent but its effectiveness is typically reduced because it is overworked and overextended.

C21

Nearly one-half of the builders/developers ignore market forces when determining the selling prices of their products.

C22

Over 80 percent of the contracts with subcontractors are fixed-price. This is an attempt to eliminate the uncertainty associated with the cost of subcontracts. While the builder/developer/general contractor attempts to maintain the fixed price by minimizing extras, the subtrade attempts to move towards a variable price by maximizing extras.

C23

Most participants in the construction industry prefer to deal with suppliers and subcontractors with which they have had a long-term relationship. To keep their subtrades "honest" in terms of pricing, most participants solicit bids from at least three subtrades periodically for small dollar-valued subcontracts and nearly always for large dollar-valued subcontracts. The choice of sub is usually based on price, and to a lesser extent on price flexibility, timing, quality, terms of payment and the perceived financial stability of the subtrade.

C24

Builders/developers/general contractors use various monitoring devices to control their subtrades. These include penalty clauses, hold backs, weekly meetings, written warnings if there are delays, and nonpayment for nonperformance. Withholding payment is perceived to be a poor method of signalling dissatisfaction to a subcontractor.

C25

An attempt is made to avoid subtrades who are not financially solvent because additional costs are incurred whenever a sub fails. Generally, the replacement sub will have to be paid more than the original sub would have been paid under the original subcontract.

C26

The use of jobbers by the subtrades is perceived as being necessary to moderate rising house construction costs.

C27

While general contractors typically finance from their pool of funds, developers and builders typically finance on a project-by-project basis.

C28

Participants in the construction industry exhibit a high degree of customer loyalty to their traditional lenders. Their use of nonbank sources of funds is low.

C29

To obtain residential interim or bridge financing from a bank, a builder or developer must satisfy the lender in terms of its track (execution) record, equity involvement, personal, corporate and/or property collateral (guarantee), and must commit to report periodically as work progresses. Typically, a builder or developer must initially supply personal and corporate financial statements, and both the corporation and its principals must assume joint and several liability for debt repayment and servicing.

C30

Most general contractors finance with equity, attempt to match their cash inflows and outflows over the life of their construction projects, and use a line of credit primarily for contingencies (i.e., a cushion for bad periods).

C31

Most of the owners/partners in this industry are male. Most of the owners/partners in this industry hold poorly diversified personal investment portfolios.

C32

Reliability, service, cost and quality tend to increase with entity size, and efficiency tends to decrease with entity size.

C33

A typical start-up has been and still is small and thinly capitalized, and its management is thin, deficient in financial management and oriented towards crisis management.

C34

Most general contractors perceive residential construction as being more difficult and more of a hassle than either commercial or industrial construction.

C35

The general contractors are divided on whether or not renovations are an attractive line of business based on risk-adjusted returns.

C36

Factors that lead to success in this industry include: cost control, fast and effective project execution, and adequate capitalization.

C37

Factors that lead to failure in this industry include: inherent high business risk, undercapitalization, lack of holding power, and poor costing and execution.

6.2 Major Recommendations

The major recommendations are as follows:

R01

A formal program of study dealing with the management of construction entities and projects needs to be established. This program should be intensive, industry-specific, and be under the auspices of one of the Associations in this field. The program of study could be modeled after the successful "Professional Banker's Program", which is administered by the Institute of Canadian Bankers.

R02

Since little is known about start-ups and failures in this industry, further study of these two aspects of the industry is required.

R03

Participants in the residential construction industry should be encouraged to adopt a greater management orientation. Thus, they should plan for both the execution and financial viability of their projects, and they should control both costs and cash flows (or profitability).

R04

Players in the residential construction industry should be strongly encouraged to get on the learning curve for computerization of their technical and management functions (including financial management).

R05

Prototype expert systems should be developed for the various management functions associated with the residential construction industry. This should begin with a system for estimation of construction costs.

R06

Given the high rate of participation by females in new business start-ups in general, the impediments to start-ups by females in this industry need to be studied further.

R07

If start-ups in this industry are to have a higher success rate, they need to be better capitalized and their managements need greater knowledge of financial matters.

R08

The desirability of renovations as a niche for smaller participants in the residential construction industry needs to be studied further.

R09

The low usage of various business and financial risk management techniques by developers/builders/general contractors requires further study.

R10

External nonbank sources of funds, and their advantages and disadvantages, need to be communicated to the small participants in the residential construction industry.

FOOTNOTES

1. This is usually a small percentage of the project's total estimated value, and is required at the acceptance of the bid.
2. In attempting to contact the nonrespondents, seventy entities could not be located. Thus, they were eliminated from the initial sample of 400 entities.
3. The English version of the questionnaire consisted of eighteen pages.
4. General and trade contractors were asked not to respond to this question.

BIBLIOGRAPHY

- Achsur, D. Real Estate-Analysis and Appraisal (Quebec: Fischer Presses, 1987).
- Adrian, J.J. Quantitative Methods in Construction Management (New York: American Elsevier Publishing Co. Inc., 1973).
- . Business Practices for Construction Management (New York: American Elsevier Publishing Co. Inc., 1976).
- Ahuja, H.N. Techniques in Planning and Controlling Construction Projects (Toronto: John Wiley and Sons, 1984).
- Anthony, R.N. and J.S. Reece. Accounting Text and Cases (Homewood, Illinois: Richard D. Irwin, Inc., 1983, 7th Edition).
- Ashworth, A. Building Economics and Cost Control (Butterworth and Co. Ltd., 1983).
- Atkinson, I. Construction Management (London: Elsevier Publishing Co. Ltd., 1971).
- Benjamin, J.R. and C.A. Cornell. Probability Statistics and Decisions for Civil Engineers (McGraw-Hill Book Co., 1970).
- Bennett, J. Construction Project Management (London: Butterworths, 1985).
- Berger, S. and J.B. Godel. Estimating and Project Management for Small Construction Firms (New York: Construction Publishing Company, 1976).
- Bony, J.B. (Editor). Handbook of Construction Management and Organization (New York: Van Nostrand Reinhold Co., 1973).
- Brealey, R. and S. Myers. Principles of Corporate Finance (New York: McGraw Hill Book Co., 1984, 2nd Edition).
- Brigham, E., A.L. Kahl and W.F. Rentz. Canadian Financial Management (Holt, Rinehart, and Winston of Canada, Ltd., 1983).
- Brooks, H. Illustrated Encyclopedic Dictionary of Building and Construction Terms (Englewood Cliffs, New York: Prentice-Hall Inc., 1976).
- Buckley, E.L. Residential Construction Management (New York: John Wiley and Sons, Inc., 1959).
- Building Contractors (Bank of America, 1978).
- Burgess, R.A. (Editor). Construction Projects: Their Financial Policy and Control (New York: Construction Press, 1982).
- Canada Constructs (Ottawa: Construction Industry Development Council, 1984).

- Canadian Business Failure Record (Dun and Bradstreet Canada, 1985).
- Clapp, J.M. Handbook for Real Estate Market Analysis (New Jersey: Prentice-Hall, 1987).
- Clough, R.H. and G.A. Sears. Construction Project Management (New York: John Wiley and Sons, 1979, 2nd Edition).
- Collier, K. Fundamentals of Construction Estimating and Cost Accounting (New Jersey: Prentice-Hall Inc., 1974).
- Day, G.S. Strategic Market Planning: The Pursuit of Competitive Advantage (St. Paul: West Publishing Co., 1984).
- Ferry, D.J. Cost Planning of Buildings (London: 1980).
- Financing Your Business: Guide for Smaller Businesses and Entrepreneurs (New York: Price Waterhouse, 1984).
- Fisk, E.R. Construction Project Administration (New Jersey: John Wiley and Sons, 1982, 2nd Edition).
- Flanagan, R. "Life Cycle Costing - The Issues Involved," National Research Council of Canada, 3rd International Symposium on Building Economics, Working Commission W-55, Proceedings Volume I.
- Franklin, H. Jr. and S.G. Franklin, Sr. Analyzing Small Business Mistakes: A Guide for Survival (January-March, 1982): 15-20.
- Halpin, D.W. Financial and Cost Concepts for Construction Management (New York: John Wiley and Sons, 1985).
- and R.W. Woodhead. Construction Management (New York: John Wiley and Sons, 1980).
- Harris, F. and R. McCaffer. Modern Construction Management (Great Britain: Chaucer Press, 1983, 2nd Edition).
- Jackson, I.J. and M.H. Gilliam. Financial Management for Contractors (New York: McGraw-Hill Book Co., 1981).
- Kao, R.W.Y. Small Business Management: A Strategic Emphasis (Toronto: Holt, Rinehart and Winston of Canada, Ltd., 1981).
- Kelly, J.R. "A Method for the Formulation of a Cost Data Base for Use During the Evolution of the Sketch Design of a Building," National Research Council of Canada, 3rd International Symposium on Building Economics, Working Commission W-55, Proceedings Volume I.
- Kryzanowski, L. and M.C. To. "Small Business Debt Financing: An Empirical Investigation of Default Risk," Canadian Journal of Administrative Sciences (June 1985): 24-42.

- Maurice, S.C. and C.W. Smithson. Managerial Economics (Homewood, Illinois: Richard D. Irwin, Inc., 1985, 2nd Edition).
- McNulty, A.P. Management of Small Construction Projects (New York: McGraw-Hill Book Co., 1982).
- Mott, C.H. Accounting and Financial Management for Construction (New York: John Wiley and Sons, 1981).
- Newbold, P. Statistics for Business and Economics (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1984).
- Newton, G.W. Bankruptcy and Insolvency Accounting - Practice and Procedure (New York: The Ronald Press Co., 1975).
- Panze, H.G. Handbook for Construction Accounting and Auditing (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1983).
- Pilcher, R. Project Cost Control in Construction (London: Collins, 1985).
- Reiner, L.E. The Builder's Complete Guide to Construction Business Success (McGraw-Hill Co., 1978).
- "Research for Construction," National Research Council of Canada, Division of Building Research (Ottawa, 1974).
- Roman, D.D. Managing Projects: A Systems Approach (New York: Elsevier, 1986).
- Seely, I.H. Building Economics (MacMillan Press Ltd., 1983, 3rd Edition).
- Statistics Canada. Corporation Financial Statistics: 1984, Catalogue 61-207, Minister of Supply and Services, Canada, 1987a.
- . The Construction Industry: 1984, "Construction in Canada," Catalogue 64-201, Minister of Supply and Services, Canada, 1987b.
- . The Construction Industry: 1984, "Mechanical Trade Contractors," Catalogue 64-204, Minister of Supply and Services, Canada, 1987c.
- . The Construction Industry: 1984, "Electrical Trade Contractors," Catalogue 64-205, Minister of Supply and Services, Canada, 1987d.
- . The Construction Industry: 1984, "Highway, Road, Street and Bridge Contractors," Catalogue 64-206, Minister of Supply and Services, Canada, 1987e.
- . The Construction Industry: 1984, "Non-Residential General Contractors and Developers," Catalogue 64-207, Minister of Supply and Services, Canada, 1987f.
- . The Construction Industry: 1984, "Residential General Contractors and Developers," Catalogue 64-208, Minister of Supply and Services, Canada, 1987g.

- . The Construction Industry: 1984, "Heavy Engineering Contractors," Catalogue 64-209, Minister of Supply and Services, Canada, 1987h.
- . The Construction Industry: 1984, "Special Trade Contractors," Catalogue 64-210, Minister of Supply and Services, Canada, 1987i.
- . Fixed Capital Flows and Stocks: 1986, Catalogue 13-211, Minister of Supply and Services, Canada, 1986.
- Stone, P.A. Building Economy. Design. Production and Organization - A Synoptic View (Oxford: Pergamon Press, 1983, 3rd Edition).
- Tenah, K.A. and J.M. Guevara. Fundamentals of Construction Management and Organization (Reston, Virginia: Reston Publishing Co., Inc., 1985).
- Thompson, P. Organization and Economics of Construction (London: McGraw-Hill Book Co. (U.K.), Ltd., 1981).
- Troy, L. Almanac of Business and Industrial Financial Ratios (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1984).
- Tucker, S.N. "Modelling Building Life Cycle Cash Flows," National Research Council of Canada, 3rd International Symposium on Building Economics, Working Commission W-55.
- Wilson, A.J. "Risk Analysis in the Design of Commercial Buildings," National Research Council of Canada, 3rd International Symposium on Building Economics, Working Commission W-55.